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Production Again On The Rise

Operations of Steel Works and Mills Are Expanded As Flow of Heavy Tonnage Keeps Up—Bookings 25 to 50 Per Cent Over December—Implement Industry Revives—Locomotive Orders Lacking

EXPANDED bookings by the mills which are being well maintained have turned iron and steel production upward after a gradual decline extending over eight months. At Chicago where the best showing is being made, the Illinois Steel Co. has gone from 75 to 83 per cent of ingot capacity in a week and is blowing in more blast furnaces. Idle steel capacity in the Pittsburgh district is resuming, notably the bessemer plant at Johnstown and larger production schedules are being laid out. In Youngstown territory independent open-hearth furnace operations are the highest since September and in sheets, since August. Even in the East where operations have been sluggish, a measurable improvement is noted.

The present market condition which furnishes the background for this increase in production is encouraging. A healthy state of buying and demand is shown in practically all products; in those which have been lagging, prospects are improving. Bookings for the first half of January with numerous mills are at least 25 to 50 per cent over the corresponding period in December and more than that above November. The leading interest at Chicago last week had the largest tonnage of specifications and new bookings in four months. The gain of 76,755 tons in the Steel corporation unfilled tonnage for December, the first since March was due more to the increase of incoming tonnage than to any holiday check on shipments. The farming implement industry is showing a degree of vitality it has not manifested in several years.

Talk of a possible coal strike April 1 is beginning to receive attention from buyers and sellers and is having some influence upon future policies.

Raw Steel Conserved

Makers are giving more thought to conserving raw steel supplies in anticipation of increasing requirements of their finishing mills. Accordingly they are limiting their open market sales of semifinished steel. A Mahoning valley maker in the week refused offers for about 20,000 tons of sheet bars and slabs. Large interests at Pittsburgh are mentioned as possible buyers of sheet bars to supplement their own production. A sheet mill in that district bought 8000 tons of sheet bars at the full price of $42.50. A northern Ohio consumer is inquiring for 15,000 tons of slabs.

Buying Lifts Prices

A step-up of fabricated steel prices has exercised some check upon the heavy structural buying in the metropolitan district but this is considered only temporary. The general view of the structural steel market is one of large and growing activity. Plans are out at Chicago for the 17,000-ton Palmer building and bids have gone in for the Tribune Tower, 10,000 tons. The Louisville & Nashville railroad is inquiring for 6500 tons of bridge work additional. Pipe lines at Boston, Denver, Portland, Ore., and in the Catskills require 15,000 tons.

Conservative policies are being pursued by the railroads in making their purchases, steel prices apparently having their part in this, but the tonnage being closed from this source is large, nevertheless. The backward spot is in locomotives for which orders are few and some shops are in sharp need of business. Car steel placed at Chicago last week totaled 20,000 tons. The Pacific Fruit Express awarded 3057 cars and other orders called for 2000 underframes. The Santa Fe needs are 5200 cars and 57 locomotives.

For the fourth consecutive week, IRON TRADE REVIEW composite of fourteen leading iron and steel products has advanced, though slightly. The week's figure is $43.29. Last week it was $43.21.

Scrap Helps Pig Iron

With heavy melting steel selling above basic pig iron at certain points in the Pittsburgh district, considerable activity, much of it of speculative character, has been stimulated in the latter grade. Cleveland sellers have inquiry for about 75,000 tons of basic iron which includes tonnage for two Ohio steel plants in addition to a large amount for brokers. Valley basic is well held at $22 though late sales have been made at $21 western Pennsylvania furnace. In general pig iron buying is fair with prices holding well. Southern iron is stronger with sales at $22 Birmingham and some makers are asking more.

The scrap market is strong with some grades scarcer. A Wheeling interest bought 12,000 to 15,000 tons of heavy melting steel at $22 delivered.

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The Authority of Industry *National and International*

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IN THE course of a year, IRON TRADE REVIEW receives thousands of questions by mail and wire. You would be surprised at the high percentage of these queries that can be answered by referring to information in the IRON TRADE REVIEW Annual.

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President: "That's easy. All of the prevailing iron and steel prices for years are in the IRON TRADE Annual."

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Pig Iron Stronger, More Active

Indications of New Buying Movement Beginning To Appear—Prices Marked Up 50 Cents in Some Districts—Inquiries for Basic Aggregate 75,000 Tons—Valley Market Now Held at $22

PITTSBURGH, Jan. 15.—At least three sales of basic iron, aggregating 5000 tons, and two sales of foundry iron are features in an otherwise quiet pig iron market. A nearby sheet mill has closed for 3000 tons of basic at $21, Johnstown, Pa., and another mill is buying 1000 tons of basic from the same source at the same price. The Pittsburgh Steel Foundry Co. closed for 1000 tons of basic at a price reported to be $21.75, delivered, Glassport, Pa. Most producers of basic iron in the valley are holding to $22, valley, as a minimum. This price also was the minimum of a steelworks interest now out of the market for the first quarter.

Scrap interests continue to issue inquiries of a speculative character for 10,000 to 20,000 tons of basic.

Bessemer steelmaking iron is exceedingly quiet. The tonnage coming out is disappointing to makers. Small sales of 50 to 100 tons alone are noted. Prices of $23, valley or Johnstown, are quoted. Two local melters bought 1000 tons each of No. 2 at $22.50, valley, in the face of a $22 price, available at Johnstown, having the same freight rate. The Connellsville Mfg. & Mine Supply Co. is closing for 200 tons of No. 2 iron, and a small quantity of gray forge. A Corry, Pa., foundry is buying 300 tons of No. 2. Interest in the malleable market is confined to small users at a distance. Local melters here protected themselves. The Wheeling Mould & Foundry Co. has bought 500 tons of low phosphorus copper-bearing iron at $28. A Lebanon, Pa., interest also is understood to have bought a small tonnage of copper-free iron at $29, valley. The Republic Iron & Steel Co. today withdrew all quotations on southern iron below $22.50, Birmingham. All inquiries must be submitted to the Youngstown office.

Eastern Inquiry Better

New York, Jan. 15.—While buying of pig iron in this territory during the past week has been exceedingly small, probably not exceeding 1500 tons in the aggregate, inquiry now is better. Current inquiry involves fully 7500 tons. Included is the inquiry for 1000 tons for the Ingersoll Rand Co., for first quarter shipment to Phillipsburg, N. J., and this is expected to be closed soon. The Worthington Pump & Machinery Corp. has put out a new inquiry for 500 tons of off-grade iron and in addition now expects shortly to take action on the 2050 tons for which it inquired in December. A New Jersey melter is in the market for 1000 to 1500 tons and another New Jersey melter is expected to put out an inquiry for 2000 tons. A Connecticut consumer is in the market for 2000 tons. In addition there are numerous smaller inquiries. There is one for 750 tons for second and third quarter shipment. The current volume of business generally is at $23, eastern furnace, and $22 to $23 Buffalo furnace, although it is reported that on some exceptionally attractive business some shading is possible. Further small sales of Virginia foundry have been made at $25 to $25.50 base furnace. One of the most interesting transactions recently has been the sale of a round tonnage of French foundry iron at $22.75, duty paid, tidewater. This iron averages 3 per cent in silicon with sulphur 0.05 per cent and phosphorus under 1 per cent.

Eastern Buyers Cautious

Boston, Jan. 15.—While inquiry still is active, sales of the past week have been few and far between and the total tonnage represented has been small. A textile machine manufacturer is understood to have closed on 600 or 700 tons against an inquiry for 1000 tons which came out a week ago. A western Massachusetts manufacturer is asking for quotations on 500 tons but is not expected to buy before the first of February. Prices are unchanged except for the appearance of a little eastern Pennsylvania resale iron at a lower delivered figure than heretofore available. Buffalo furnaces are well established at a $22 base with 50-cent differentials. Eastern Pennsylvania producers ask $23 at the furnace for No. 2 plain iron (1.75-2.25, silicon) with differentials up to $1. Several sales of No. 2x eastern Pennsylvania iron have been made at $23, furnace, or $26.65, delivered.

Quote $22.50 to $23 at Buffalo

Buffalo, Jan. 15.—Inquiry for pig iron amounts to about 6000 tons, an improvement over the week before. One inquiry is for 1700 tons of foundry and another for 1000 tons, but neither is expected to come to local furnaces. The price quoted by one maker is $23, but some iron has been taken at less. No. 2 plain, (1.75 to 2.25 silicon) has been sold at $22, and $22.50 is being quoted by some concerns. Some iron is believed to have been sold under $22 base. One local concern is quoting on second quarter business.

Heavy Demand for Basic

Cleveland, Jan. 15.—Demand for basic iron is the feature of special interest in the market this week, one maker having inquiries in the week for an aggregate of about 75,000 tons. A large number of the inquiries are coming from speculative sources, though many consumers are represented, one seeking 15,000 tons. Producers are reluctant to quote, and one seller with headquarters here, reports this week to have refused 50,000 tons of basic offered at $22, valley. This concern and some others here refuse to name a price for the present. The market is considered by them to be not less than $22, valley. No sales have been made, though negotiations are proceeding. A local interest has before it inquiries for 25,000 to 30,000 tons of basic. The high price of scrap, and uncertainties with respect to the fuel situation are influencing the market. Inquiries mainly are for delivery in this quarter, though some extend into the second.

In other respects the pig iron market is showing a new animation. Prices are stronger, and in some instances higher than a week ago. A lake furnace closed for 16,000 tons of foundry and malleable in the week, one lot amounting to over 7000 tons for an automotive interest. The minimum today is $23, furnace, and the range, $23 to $23.50, as compared with $22.50 to $23 a week ago. A Cleveland furnace also is naming $23, furnace, as its minimum, and also has quoted $23.50, furnace, on some business. Several sales of moderate size tonnages have been made in Cleveland. Sellers here regard the valley market as $22.50, furnace. A merchant interest sold around 5000 tons in the week in lots up to 1000 tons at $22.50 furnace, and booked a tonnage of No. 2x at $23. Only one interest here is known to be quoting on second quarter business. This company has a price of 50 cents to $1 over its current figures, for that delivery. It has taken several thousand tons. Shipments are continuing in good volume. Inquiries indicate renewed interest for the first quarter; with one maker they amount to over 6000 tons. Some sales of silveries have been made at the full market price.

Inquiries for basic include 10,000 tons for the American Rolling Mill Co., Middletown, O., and also a large tonnage for a northern Ohio interest. A lake furnace closed Tuesday for 1000 tons of foundry iron for an Ohio melter at $23, base, furnace. Some fair size tonnages of malleable have been taken at $22.50 furnace.

Southern Ohio Market Active

Cincinnati, O., Jan. 15.—Increased activity is noted in the local pig iron market. Sales involve several thousand tons, for prompt and first quarter delivery. The southern Ohio market ranges from $22 to $23, Ironton base. One producer quoting $22 has obtained a fair volume of business at that price. Southern iron is quoted at $21 to $22, Birmingham base. At least three furnace interests in the South are asking $21 base, a similar number $22, while the Republic Iron & Steel Co. has withdrawn from the market on the base grade for first quarter. The outstanding sale is 120 tons of northern iron to the Parkersburg Rig & Reel Co. The Jeffrey Mfg. Co., Columbus, O., closed on its inquiry for 400 tons of northern iron with a valley furnace, while the Wickham Piano Plate Co. bought 300 tons of the same grade. The Niles Tool Works Co., Hamilton, O., pur-

chased 300 tons of northern iron. A sale of 400 tons of southern iron to the H. P. Deuscher Co., Hamilton, O., is noted, while the Treaty Co., Greenville, O., closed for 200 tons of the same grade. The Louisville Car Wheel & Railway Supply Co., Louisville, is reported to have bought several hundred tons of northern foundry iron (1.25 to 1.75 silicon) in this district at $21.50, Ironton. The National Cash Register Co., Dayton, O., purchased 125 tons of northern iron for early shipment. New inquiries involve small tonnages, with one exception that of the Hooven, Owen & Rentschler Co., Hamilton, O., which has been in the market for 1000 tons of northern iron for nearby delivery.

Bullish Sentiment at Chicago

Chicago, Jan. 15.—Pig iron sales are moderate, with a fair number of deals for 500 to 1000 tons. The market, however, is developing much strength. Iron now is going at $23.50, Chicago furnace, but an advance of 50 cents apparently is in sight. Sellers are more loath to quote for second quarter, feeling an advance is certain. Because pig iron is liquidated much more than steel the general feeling is bullish. It is believed a fair buying movement will develop by the end of January when foundries and other sellers receive definite orders for their products. The Hurley Machine Co., and Illinois Malleable Iron Co. are inquiring for several hundred tons each, the former foundry, and the latter malleable. Southern iron is stronger, but selling still is negligible. It is understood $21.50, Birmingham, is the lowest price being done, and $22 is the more nearly going figure. The market for low phosphorus iron is quiet. Charcoal iron inquiries usually are limited to carloads and consumers are not active in covering.

Demand Continues Dull

Philadelphia, Jan. 15.—Pig iron demand in this district continues exceedingly dull and is restricted mainly to small lots for prompt shipment. Most of the eastern furnace bookings are coming from other districts. The market continues unchanged at $23, base furnace, on No. 2 foundry. The largest sale during the past week was that of from 2000 to 3000 tons of basic at unchanged price. Low phosphorus sales were limited to a few hundred tons of copper bearing iron which went at $28, furnace. A considerable tonnage was involved in miscellaneous sales of Virginia foundry iron which continues to be quoted at from $25 to $26, base furnace. Only three furnaces now are operating in Virginia. The Temple, Pa., furnace is expected to blow out soon.

Shipments Good; Prices Steady

St. Louis, Jan. 15.—Trading in pig iron is confined almost exclusively to small lots for prompt shipments. A large number of consuming plants are idle or working on part time, while completing inventories or making repairs. This is true especially of stovemakers, some of whom will remain inactive until the last week in January. The largest inquiry is for 4000 tons of foundry iron for an Illinois melter, second quarter. An Iowa interest wants 150 tons, and a local specialty maker is asking for 100 tons, first quarter. Shipments are holding up. Prices remain unchanged. Southern iron is quoted at $21 to $22, Birmingham. An offer of $20 for a round tonnage was refused by a leading producer. Chicago is firm at $23 to $23.50. The leading local producer is asking $24 to $25, f.o.b. Granite City.

Quotations Are Stronger

Birmingham, Ala., Jan. 14.—Southern furnace interests are asking $22 to $23 per ton for No. 2 foundry and sales in small lots are still being made for first quarter. The Woodward Iron Co. will blow in its No. 3 furnace this week, making three at Woodward and one at Vanderbilt in operation. The Sloss-Sheffield Steel & Iron Co. is getting a furnace in readiness and may start it shortly. The Alabama Co. is relining its No. 1 furnace at Gadsden and repairing stoves and may relight it the latter part of February. Few inquiries are for second quarter. One of the smaller interests will sell nothing under $23 and $22 base is the minimum. The melt in the home territory is improving.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Jan. 16, 1924	Dec., 1923	Oct., 1923	Jan., 1923
PIG IRON				
Bessemer, valley del., Pitts.	$24.77	24.17	27.27	29.27
Basic, valley	22.00	20.50	23.75	25.90
Basic, eastern del., eastern Pa.	23.50	23.30	24.00	27.70
*No. 2 foundry, del. Pitts.	24.27	23.77	25.17	28.77
*No. 2 foundry, Chicago	23.50	23.00	25.60	28.80
*Southern No. 2, Birmingham	21.50	20.75	20.20	23.30
*Southern Ohio, No. 2, Ironton	22.50	22.50	23.90	27.90
**No. 2X, Virginia furnace	25.50	24.50	25.00	27.50
**No. 2X, eastern del., Phila.	24.26	24.26	24.51	29.56
Malleable, valley	22.00	21.50	23.25	27.75
Malleable, Chicago	23.50	23.00	25.60	28.80
Lake Superior charcoal, Chicago	29.04	28.80	30.05	33.15
Gray forge, val. del. Pittsburgh	23.27	23.27	24.52	27.77
Ferromanganese, del., Pitts.	113.79	113.79	112.79	109.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	42.50	42.50	42.50	37.50
Sheet bars, open-hearth, Pitts.	42.50	42.50	42.50	37.50
Billets, bessemer, Pittsburgh	40.00	40.35	41.50	37.50
Billets, open-hearth, Pittsburgh	40.00	40.35	41.50	37.50
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.40	2.40	2.40	2.00
Steel bars, Chicago	2.50	2.50	2.50	2.08
Steel bars, Philadelphia	2.72	2.72	2.72	2.385

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Jan. 16, 1924	Dec., 1923	Oct., 1923	Jan., 1923
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia	$2.62	2.62	2.62	2.365
Iron bars, Chicago mills	2.40	2.40	2.40	2.35
Beams, Pittsburgh	2.50	2.50	2.50	2.05
Beams, Philadelphia	2.72	2.72	2.72	2.385
Beams, Chicago	2.60	2.60	2.60	2.18
Tank plates, Pittsburgh	2.50	2.50	2.50	2.05
Tank plates, Philadelphia	2.72	2.72	2.72	2.385
Tank plates, Chicago	2.60	2.60	2.60	2.18
Sheets, blk., No. 28, Pittsburgh	3.75	3.75	3.75	3.35
Sheets, blue anl., No. 10, Pitts.	3.00	2.95	3.00	2.50
Sheets, galv., No. 28, Pittsburgh	5.00	4.90	5.00	4.35
Wire nails, Pittsburgh	3.00	3.00	3.00	2.70
COKE				
Connellsville furnace	3.75	3.85	3.85	8.25
Connellsville foundry, ovens	4.25	4.80	4.80	9.00
OLD MATERIAL				
Heavy melting steel, Pittsburgh	21.50	18.35	16.10	21.65
Heavy melting steel, eastern Pa.	18.00	16.80	15.50	19.70
Heavy melting steel, Chicago	17.00	16.50	14.50	18.70
No. 1 wrought, eastern Pa.	19.50	19.00	18.00	22.25
No. 1 wrought, Chicago	17.00	16.50	15.30	19.40
Rails for rolling, Chicago	18.50	17.30	16.25	20.55

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

Jan. 16, 1924	Jan. 9, 1924	Dec., 1923	Oct., 1923	Jan., 1923	Jan., 1914
$43.29	$43.21	$43.02	$43.84	$41.17	$23.03

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES, PAGE 254, WAREHOUSE, PAGE 250, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 252

Pig Iron

Prices per gross ton

Bessemer, valley	$23.00
Bessemer, Pittsburgh	24.77
Basic, valley	21.00 to 22.00
Basic, Pittsburgh	22.77 to 23.77
Basic, Buffalo	23.00
Basic, del., eastern Pa.	23.25 to 23.75
Malleable, valley	22.00 to 22.50
Malleable, Pittsburgh	21.77 to 24.77
Malleable, Chicago	23.50
Malleable, Buffalo	23.00 to 23.50
Malleable, del., eastern Pa.	24.00 to 25.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	24.76 to 25.26
No. 1X, Buffalo	24.00 to 25.00
No. 2 foundry, valley	22.50
No. 2 foundry, Pittsburgh	24.27
No. 2 foundry, Buffalo	23.00
No. 2 foundry, Chicago	23.50
No. 2 foundry, Granite City	24.00 to 25.00
No. 2 foundry, Ironton furnace	22.50 to 23.00
No. 2 foundry, Cleveland, del.	23.00 to 23.50
No. 2 foundry, del., Phila.	23.76 to 24.26
No. 2 foundry, N. J. tidewater	24.13 to 24.76
No. 2X, eastern del., Phila.	24.26 to 24.76
No. 2X, east. N. J. tidewater	24.63 to 25.26
No. 2X, eastern del., Boston	26.65 to 27.65
No. 2X foundry, Buffalo fur.	23.50 to 24.00
No. 2X, Buffalo, del. Boston.	26.92 to 27.92
No. 2 southern, Birmingham	21.00 to 22.00
No. 2 southern, Cincinnati	25.05 to 26.05
No. 2 southern, Chicago	27.01 to 28.01
No. 2 southern, Philadelphia.	28.80 to 29.80
No. 2 southern, Cleveland	27.01 to 28.01
No. 2 southern, Boston (rail and water)	27.91 to 28.91
No. 2 southern, St. Louis	26.17 to 27.17
No. 2X, Virginia furnace	25.00 to 25.50
No. 2X, Virginia, Phila.	29.77 to 30.27
No. 2X, Virginia, Jersey City	30.04 to 30.54
No. 2X, Virginia, Boston	30.92 to 31.42
Gray forge, eastern Pa.	23.25 to 23.50
Gray forge, val. del., Pitts.	23.27 to 23.77
Low phos., standard, valley	29.00
Low phos., standard, Phila.	29.50 to 30.00
Low phos., Lebanon, furnace	28.00
Charcoal, Birmingham	32.00 to 33.00
Charcoal, Superior, Chicago	29.04

Silvery Iron

Jackson County, Ohio, furnace

7 to 8 per cent	31.00
8 to 9 per cent	32.50
9 to 10 per cent	34.50
10 to 11 per cent	36.50
11 to 12 per cent	39.00
12 per cent	41.50

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 to 11 per cent	41.50
11 to 12 per cent	44.00
12 to 13 per cent	46.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$109.00 to 110.00
Ferromanganese, delivered, Pittsburgh	113.79 to 114.79
Spiegeleisen 19 to 21 per cent furnace or tidewater	38.00 to 40.00
Ferrosilicon, 50 per cent contract freight allowed	75.00
Ferrotungsten standard, cents per pound contained	85.00 to 90.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$3.75 to 4.25
Connellsville foundry	4.75 to 5.50
New River foundry	11.00 to 11.50
Wise county furnace	4.75 to 5.75
Wise county foundry	5.75 to 6.50
Alabama furnace	5.00 to 6.00
Alabama foundry	5.50 to 6.50

By-Product

Foundry, Newark, N. J., del.	$10.91
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.50
Foundry, Granite City, Ill.	12.50
Foundry, Alabama	5.00 to 6.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$40.00
Open-hearth, Youngstown	40.00
Open-hearth, Philadelphia	45.17
Bessemer, Pittsburgh	40.00
Bessemer, Youngstown	40.00
Forging, Pittsburgh	45.00
Forging, Philadelphia	50.17

SHEET BARS

Open-hearth, Pittsburgh	$42.50
Open-hearth, Youngstown	42.50
Bessemer, Pittsburgh	42.50
Bessemer, Youngstown	42.50

SLABS

Pittsburgh	$40.00
Youngstown	40.00

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh $51.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.35c to 2.40c
Universal skelp, Pittsburgh	2.35c to 2.40c
Sheared skelp, Pittsburgh	2.35c to 2.40c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.50c
Structural shapes, Phila.	2.67c to 2.82c
Structural shapes, New York	2.69c to 2.84c
Structural shapes, Chicago	2.60c
Tank plates, Pittsburgh	2.50c
Tank plates, Philadelphia	2.67c to 2.82c
Tank plates, New York	2.69c to 2.84c
Tank plates, Chicago	2.60c
Bars, soft steel, Pittsburgh	2.40c
Bars for cold finishing, Pitts.	2.55c
Bars, soft steel, Philadelphia	2.72c
Bars, soft steel, New York	2.74c
Bars, soft steel, Chicago	2.50c
Bars, refined iron, Pittsburgh	3.25c to 5.00c
Bars, rail steel, Chicago	2.30c to 2.33c
Bars, rail steel, mill	2.10c to 2.20c
Reinforcing bars, billet, Pitts.	2.40c
Bar iron, common, Phila.	2.62c to 2.67c
Bar iron, common, New York	2.64c to 2.69c
Bar iron, common, Chicago	2.40c
Bars, forging quality, Pitts.	2.65c

Hoops, Bands, Shafting

Prices per pound

Hoops, Pittsburgh, under 5 in.	3.00c
Hoops, Pittsburgh, 20 gage, under 1 in.	3.35c to 3.50c
Bands, Pittsburgh	3.00c
Cold finished steel bars, Pittsburgh base	3.00c
Steel shafting, Pittsburgh	3.00c
Cotton ties, bundle 45 lb. Pittsburgh	$1.67

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	30.00 to 34.00
Light rails, 25 to 45, mill	2.15c to 2.25c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	3.05c to 3.15c
Spikes, small railroad, Pitts.	3.40c to 3.50c
Spikes, boat and barge, Pitts.	3.50c
Spikes, railroad, Chicago	3.10c
Track bolts, Pitts. Standard.	4.00c
Track bolts, Pitts., small	4.75c to 5.00c
Track bolts, Chicago	4.10c
Tie plates, Pittsburgh	2.55c to 2.60c
Tie plates, Chicago	2.60c

Spike, tie plate and truck bolt prices for carlots.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	3.00c
Galv'd nails, 1-inch and over	5.25c
Plain wire, Pittsburgh	2.75c
Annealed wire, Pittsburgh	2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.35c
Barbed wire, painted, Pitts.	3.45c
Barbed wire, galv., Pitts.	3.80c
Polished staples, Pittsburgh	3.45c
Galvanized staples, Pittsburgh	3.80c
Coated nails, count keg, Pittsburgh	2.70c
Woven wire fencing (retailers)	65 off
Woven wire fencing (jobbers)	67½ off

Chain, Piling, Strip Steel

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.55c
Hot rolled strip steel, Pittsburg stamping quality	3.00c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base	5.00c

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.75c to 3.85c
No. 28, bessemer, Pitts.	3.75c to 3.85c
No. 28, open-hearth, Phila.	4.02c to 4.17c
No. 28, open-hearth, Chicago.	4.09c to 4.19c

TIN MILL, BLACK

No. 28, open-hearth, Pitts.	3.75c to 3.85c

GALVANIZED

No. 28, open-hearth, Pitts.	5.00c
No. 28 bessemer, Pittsburgh	5.00c
No. 28, open-hearth, Phila.	5.22c to 5.32c
No. 28, open-hearth, Chicago.	5.19c to 5.34c

BLUE ANNEALED

No. 10, open hearth, Pitts.	3.00c
No. 10, bessemer, Pittsburgh	3.00c
No. 10, open-hearth, Phila.	3.32c
No. 10, open-hearth, Chicago.	3.34c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	5.35c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$59.20 to 60.20
Six-inch and over, Chicago	55.20 to 56.20
Four-inch, Birmingham	51.00 to 52.00
Six-inch and over, Birmingham	47.00 to 48.00
Four-inch, New York	65.60 to 66.60
Six-inch and over, New York	60.60 to 61.60

Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Scrap Scarce and Strong

All Markets Participate and Heavy Melting Steel Rises Above Basic Pig Iron—Dealer Stocks Not Sufficient for Needs

SCRAP PRICES, PAGE 254

Chicago, Jan. 15.—Strength of steel scrap grades east of Chicago is having a marked effect upon iron and steel scrap prices. It is understood Youngstown users are paying $22 for steel, which comes close to making it profitable to ship scrap from Chicago to Youngstown. Dealers here are not anxious to ship scrap out and believe local melters of steel grades will be compelled to buy shortly to protect themselves. Activity among dealers is increasing. Demand for foundry grades is only fair but malleable is sought, with the supply not equal to demand. Heavy melting steel is now up to $17 to $17.50. Advances of 50 cents to $1 have occurred in nearly all grades. Railroad offerings current include 12,000 tons by the Southern, 9500 tons by the Chesapeake & Ohio, 3000 tons by the Rock Island, 2300 tons each by the Wabash and Northern Pacific and 1500 tons by the Chicago & Alton.

New England Sales Improve

Boston, Jan. 15.—Sales and prices of iron and steel scrap are higher. High grade heavy melting steel has sold at $15 on cars at shipping point. This is mostly for western Pennsylvania delivery. The Bethlehem Steel Co. offers a price which requires dealers to secure tonnage at $13 at New England points and comparatively little tonnage is appearing at this level. Blast furnace borings and turnings have moved freely at $9.75, an advance of about 25 cents above the price a week ago. Buying of chemical borings has forced the price to $12.50 on cars. All cast grades are inactive. An eastern Pennsylvania consumer of stove plate took a car at $12.50 shipping point. The Boston elevated railroad will sell 125 tons of malleable and cast and 175 tons of wrought, and other scrap Jan. 18.

Stronger at New York

New York, Jan. 15.—While the scrap market here is stronger, it does not reflect the strength shown in some other districts, where melting steel is higher than pig iron. Dealers are booking orders for Eastern Pennsylvania consuming points at $17.50 delivered, or more than $5 under the delivered price of basic iron, which is showing no particular strength.

Among grades advanced within the past few days are clean cast borings, now holding at $10 to $11, f.o.b. New York; No. 1 steel, $13.50 to $14; and No. 1 railroad steel, $14.25 to $14.75. Principal activity continues to be centered in railroad steel, with borings and turnings next.

Strong Situation in East

Philadelphia, Jan. 15.—Iron and steel scrap is strong here, heavy melting steel now being $18 to $18.50 delivered. Dealers are freely paying $18. While all steel mills in the east need scrap actual buying is restricted to moderate tonnages because dealers are not selling freely. Dealers believe they could get $20 for a substantial tonnage. A strong factor in the market here is the advancing trend at Pittsburgh where steel scrap sold yesterday at $22 and $22.50, delivered, and at $23 today. It is understood here that the Carnegie Steel Co. alone in the past four weeks has bought 60,000 tons of steel scrap for its Munhall and Duquesne plants.

Scrap Scarce at Pittsburgh

Pittsburgh, Jan. 15.—Iron and steel scrap promises to hold its present position as a shortage exists. There has been no sale of heavy melting steel scrap here since the Carnegie Steel Co. paid $20. A Weirton, W. Va., consumer since has paid $21.50 for approximately 20,000 tons, and a Steubenville, O., user bought, as far as can be ascertained, 12,000 to 15,000 tons at $22. One unconfirmed sale of 1000 tons is reported to have been at $22.50. Specialties have advanced 50 cents to $22.50 to $23. Shovel turnings have been sold at as high as $17. Much of the strength of the market is in the limited supply. Larger yards have a total of only about 40,000 to 50,000 tons on hand whereas a year ago one alone had twice that much.

The Republic Iron & Steel Co. and other consumers have been paying $21 to $22 for heavy melting steel. Dealers in the Canton and Massillon, O., districts are paying around $21 or $21.50. Pig iron can be had below the price of heavy melting steel for the first time in many years. On this account several scrap sellers lately have put out inquiries for 10,000 to 50,000 tons of basic pig iron, one or two of which have closed.

Strong at Cleveland

Cleveland, Jan. 15.—Scrap prices contine to advance here and the valleys. Demand by consumers and efforts of dealers to increase stocks, which have reached an unusually low point, are responsible for the exceptional strength. Users who bought to advantage before the close of the year have dipped into reserve supplies and now seek tonnage to meet needs of the near future.

Dealers are having difficulty in obtain-

(*Concluded on Page 212*)

Semifinished Sales Heavy

Several Leading Makers Booked Up for First Quarter, with Demands of Users Still Unsatisfied—Billets and Slabs Going at $40

SEMIFINISHED STEEL PRICES, PAGE 197

Pittsburgh, Jan. 15.—Semifinished steel byers have continued their activity as regards the first quarter and now several makers are out of the market for that period. This is shown by the fact that some northern Ohio users who ordinarily supply their needs in Cleveland have offered Youngstown, O. steel mills as much as 2500 tons of sheet bars at a time for early delivery and have offered to pay $42.50, Youngstown, because the Cleveland maker cannot supply their needs. The Youngstown, O. producers likewise are fully obligated and have had to turn down these offers.

A sheet maker in the Pittsburgh territory has just closed on 8000 tons for first quarter at $42.50, Pittsburgh. Several other contracts have been recorded since the first of the year for varying tonnages, all at the $42.50 level, either Pittsburgh or Youngstown. Rerolling billets, 4 x 4-inch, and slabs have been contracted for at $40, Pittsburgh or Youngstown, one lot of 1000 tons of slabs being purchased by a Bridgeville, Pa. interest this week. Practically all of the forging billet buyers in this territory have covered. Some of the oil well supply interests which refused to contract in the fourth quarter of last year, because they saw nothing ahead to warrant such action, are placing attractive tonnages at $45, Pittsburgh, for delivery until April 1.

While less activity is noted in the wire rod market at present, some contracts have been written up in connection with this commodity at the $51 base Pittsburgh price. On practically all of these contracts the January specifications have been received and soon the February specifications will come to hand. Skelp is quiet, from 2.35c to 2.50c base Pittsburgh, representing the full spread of the market with little or nothing moving at the maximum figure. Boiler tube and wheel skelp continues in fair demand.

Mills Filling Up

Youngstown, O., Jan. 15.—Approximately 17,000 tons of sheet bar and slab business was rejected by one semifinished producer here the past week because of present obligations and demands of intermill departments. Consumers are releasing specifications to the maximum of their contracts. Only one maker is in a position to entertain first quarter semifinished business and then only such that entails sheet bars. Slabs for blue annealed production are quoted on the same basis as sheet bars, namely $42.50, Youngstown or Pittsburgh, but an attractive date of delivery cannot be had. A few thousand tons of sheet bar business was entered late last week at the prevailing market price.

Eastern Market Quiet

Philadelphia Jan. 15.—Billet business is lacking. The market continues to be $40, Pittsburgh, for rerolling and $45 for forging quality.

Seeks 15,000 Tons of Slabs

Cleveland, Jan. 15.—An inquiry for 15,000 tons of slabs from a northern Ohio consumer is current in this market. Continuing the revived interest in semifinished material, noted a week or two ago, buyers have sought tonnages from the leading maker in this district. This company has been booked solid for the first quarter, and some users ordinarily supplied by it have had to seek material from other makers. The price of sheet bars is $42.50, valley, while some billets and

slabs have been booked recently at $40.

Growing Demand

Continues in Manganese Alloys —2500 Tons of English Ferro Sold

FERROALLOY PRICES, PAGE 197

New York, Jan. 15.—Demand for manganese metals is improving slowly, but consumers generally do not see much prospect for advancing prices in the near future and hence are taking their time buying. During the past week at least 2500 tons of English ferromanganese have been sold at $110 duty paid tidewater. Domestic ferromanganese continues obtainable at $109, duty paid tidewater. Some additional ferromanganese inquiry is pending. Sales of spiegeleisen during the past week aggregated about 300 tons. This business went at $39 to $40 furnace for 20 per cent metal but attractive tonnages for forward shipment undoubtedly could be placed at somewhat less.

Contracts for 50 per cent ferrosilicon and ferrochrome for 1924 have been completed with practically all consumers, the largest user of ferrosilicon have closed a week ago. The price of 50 per cent ferrosilicon stands at $75, delivered; 14 to 16 per cent, $40 to $42; furnace; 75 per cent, $140 delivered. The price of the 4 to 6 per cent carbon grade of ferrochrome is 10.75 cents per pound contained; 6 to 8 per cent. 10.50 cents; maximum 2 per cent, 25 cents; maximum 1 per cent, 27 cents; maximum 0.75 per cent carbon, 30 cents; maximum 0.10 carbon, 38 cents. Ferrotungsten is unchanged at 86 to 90 cents a pound contained; ordinary wolframite, $8.10 to $8.25 a shor ton unit. Ferrovanadium remains at $3.50 to $4 a pound contained.

Manganese Users Still Buying

Pittsburgh, Jan. 15.—Evidently a few prominent ferroalloy users did not participate in the recent buying movement in connection with ferromanganese, ferrosilicon, etc., as is shown by the past week's further activity. Between English sellers and domestic producers about 3500 or 4000 tons of ferromanganese were sold in lots of 50,300, 500 or 1000 tons.

On spiegeleisen, some fair size tonnages have been closed. The larger lots have been taken at $38 furnace, for the high grade and $37 for the 16 to 19 per cent metal.

Additional contracting in ferrosilicon was carried on this past week at $75, freight allowed. In addition to the local user referred to last week who since has closed at $75 freight allowed, the Edgewater Steel Co. is understood to have bought a single carload, and each of two others has contracted for a year's supply. These deals involve 250 and 500 tons, respectively. Ferrochrome users are well covered at 10 and 10¼ cents.

Chicago Is More Active

Chicago, Jan. 15.—More activity in alloys is shown in this district. One buyer is inquiring for 1000 tons of ferromanganese and another for 500 tons of spiegeleisen. Quotations on ferromanganese are $110, seaboard, and on spiegeleisen, $48.50, delivered. Numerous carload lots of alloys are under inquiry.

Furnace Coke Price Firmer

Buyers Finding It More Difficult To Do Less Than $4—Good Movement of Medium Sulphur Grade—Foundry Market Dull

COKE PRICES, PAGE 197

Pittsburgh, Jan. 15.—Spot transactions alone are represented in the market for beehive furnace coke in the absence of merchant stacks going into blast. Since production of 48-hour fuel about equals commitments little tonnage is left for the open market. It is more difficult to obtain good spot tonnages below $4. One sale of 10 cars last Saturday is noted at that figure. However prices at $3.75 still appear occasionally. One operator quoted that figure on 1000 tons or more last week, but lost the business. The movement is heavy in medium sulphur coke. The American Smelting & Refining Co., Perth Amboy, N. J., and Chicago, placed two orders for 4000 tons around $3.50. Various other smelters have added round tonnages to their contracts placed some time ago, including the Nichols Copper Co., United States Metals & Refining Co. and the International Nickel Co. Shipments went forward last week to the Braden Copper Co., South America, amounting to 5500 tons, from two sources, at $3.65. Spot sales medium sulphur coke are recorded down to $3.25. Users are indifferent toward the foundry coke market. Only small sales are noted at $4.75 to $5.50. Sellers holding to the higher figures of $6 to $7 are doing little. Practically all users are protected for several months. Production of coke, according to the *Connellsville Courier* in the week ended Jan. 5 was 186,810 tons compared with 165,530 tons in the preceding week.

Foundry Demand Light

New York, Jan. 15.—Trading in foundry coke in this territory is comparatively small. A few transactions during the past week have involved 200 to 300 tons each for prompt shipment, but most of the business has involved single carloads. The market on ordinary brands of foundry coke for spot shipment continues $5 to $5.25, Connellsville, although on special brands higher is being obtained. Seaboard By-products foundry coke continues $10.91 delivered at Newark and other New Jersey consuming points.

Foundry Coke Prices Higher

Cincinnati, O., Jan. 15.—The coke market continues firm, and a good movement of the foundry grade appears in small lots. Connellsville foundry coke prices are up 25 cents a ton for spot shipment and 50 cents on contract. Wise county foundry fuel ranges from $5.75 to $6.50, ovens. The spread on New River foundry coke has been lessened 50 cents, the prevailing quotation ranging from $11 to $11.50. Demand for furnace coke is lacking. A leading seller says that by-product coke specifications this month will exceed those of December 30 per cent.

Industrial Needs Increase

St. Louis, Jan. 15.—After weeks of steady accumulation, the leading producers of by-product coke are beginning to draw on their reserve stocks, due to cold weather. There has been some improvement in demand from industrial users, and fair sales have been made to smelters and mines in the tristate lead and zinc district. Demand for foundry coke continues slow and featureless. Relatively little eastern coke has been included in recent buying. The leading local by-product producer has reduced its quotation to $12.50. Good sales of coke breeze are reported, the largest during the past several days being 3000 tons to an east side melter.

Southern Market Still Slow

Birmingham, Ala., Jan. 14.—Southern cokemakers selling in the open market report demand equals the make, but the production is considerably off. The iron and steel companies making coke for their own use are beginning to increase operations, as their needs will be greater. Quotations show no change, by-product foundry coke selling as low as $5, up to $6.50.

Wire Demand Large

Sales and Requirements for Nails, Fence and Other Products

WIRE PRICES, PAGE 197

Pittsburgh, Jan. 15.—Although specifications for wire products are not up to expectations, makers find the inflow of business has improved and promises to continue. Instead of one or two cars daily, as was the rule, some now book five or six cars per day, mostly mixed carloads. An increased buying rate is noted in woven wire fencing. Jobbers are adding to stocks for spring demand. Nail makers have been able to accumulate fair stocks and are able to make prompt deliveries. Enough specifications are in hand to equal production on at 70 to 80 per cent for at least 30 days. Orders for shipment beyond that date in February and into March await specifications.

Demand Nearly Full

Buffalo, Jan. 15.—Demand for wire is good. Consumers and jobbers are both responsible for a steady and strong demand. Business comes from all lines but it is especially good for springs, wire cloth and mesh. A local mill reports it is on practically 100 per cent operation in all departments.

Position Improved Each Week

Chicago, Jan. 15.—Makers of wire and wire products find their business increasing weekly. Operations, however, have not yet been changed as increased demand found stocks fairly large. The fencing business is getting into its spring stride. Demand for nails is good. Although jobbers have bought heavily of wire and wire products it is evident they have not placed all of their first quarter needs. Prices are well maintained.

Bar Users Buying Freely

Agricultural Implement Makers Find Best Demand in Years—Producers in Comfortable Position with Much New Business Appearing

BAR PRICES, PAGE 197

Chicago, Jan. 15.—Bookings and specifications in soft steel bars by one maker last week were the heaviest in four months. Business comes from all classes of users. Not in months have implement makers been so comfortably placed and in anticipation of the best spring in several years they are specifying their bars. Railroad freight cars placed in the Chicago district last week by builders called for 20,000 tons of finished material. More steel for freight cars has been placed here since the middle of December than in the preceding seven months. Automotive interest buying is heavy. Bar capacity for first quarter is now well taken. The soft steel bar price is 2.50c, Chicago.

In both rail steel bars and bar iron some slight improvement is noticeable. Orders are now equalling shipments. One turn still rules in most mills, but the feeling is more confident. Rail steel bars bring 2.30c, mill, and bar iron 2.40c, Chicago.

Bar Inquiry Heavy

Boston, Jan. 15.—Bar sales dropped off during the past week after the heavy business at the first of the year, but are still well above the December average. Inquiry from automobile parts manufacturers is unusually heavy. The price is firm at 2.40c, Pittsburgh.

Jobbers Specify Better

Pittsburgh, Jan. 15.—Orders for merchant steel bars from jobbers and specifications from cold-drawn steel bar makers are showing considerable life. Some mills are entertaining attractive specifications from jobbers involving up to 400 tons at a time, 20 or 25 tons of a size, whereas usually the aggregate would be 100 tons of numerous small lots, two or three tons of a size. Because the orders are so desirable they are receiving immediate attention. Jobbers evidently are replenishing stocks for heavy demand in the spring, particularly in the event of a coal strike. Heavy orders for cold-drawn steel barmakers are reflected in specifications for merchant steel bars. Refined iron bars continue in fair demand, some small orders being taken each week, although fairly good deliveries are being made on back orders. From 3.25c to 5.00c, base Pittsburgh, is quoted.

Sells Auto Bar Tonnage

Buffalo, Jan. 15.—A local mill is reported to have taken some good orders during the past week or two. Contracts with a Detroit automobile concern are said to have run into some thousands of tons.

Implement Plants Are Buying

Cleveland, Jan. 15.—Buyers of steel bars in this territory continue to place their forward requirements under cover. Farming implement manufacturers who had bought sparingly for several years past are included. Several of these companies have closed for lots of 500 tons or so for first quarter and other negotiations are going forward. More users of bars in other lines have covered on their forward requirements. Steel bar prices remain firm at 2.40c, Pittsburgh, with no reports of concessions. Band prices which recently have gone as low as 2.75c, Pittsburgh, with some makers are stronger with 3.00c now generally quoted.

Buying Increasing Steadily

Philadelphia, Jan. 15.—Steel bar demand in the first half of January with some makers was nearly double that for the first half of December. Mills report good bookings of specific tonnages for prompt shipment while most of the single lots are smaller than 200 tons each. The aggregate is good. A much larger percentage of current inquiries is being closed than before th eend of the year. The market on steel bars continues firm at 2.40c, Pittsburgh.

Specify Cold Drawn Freely

Pittsburgh, Jan. 15.—Shipments of cold-drawn steel bars have been larger than in the corresponding period in 1923, while production is about the same, according to cold drawn bar finishers. Carry-overs from last year are not so heavy and incoming orders are more numerous. Specifications have been from diversified lines of users, a great improvement being noted among machine screw products people closely allied with the automotive industry, which has been furnishing large tonnages of cold-drawn bar specifications. The market is firm at 3.00c, base Pittsburgh. Some larger users already have furnished specifications for first quarter while others have specified for at least a month. Prompt deliveries are available on practically every shape although rounds can be had most promptly.

Bolt, Nut and Rivet Users Seek Supplies

NUT AND BOLT PRICES, PAGE 252

Pittsburgh, Jan. 15.—Few additional orders for nuts, bolts and rivets in single carloads have been closed. Jobbers and users are active and evidently stocks are being replenished now that inventories are out of the way. Users are not buying heavily for future shipment as fairly prompt deliveries are available and apprehension is not felt about getting more material when needed. Rivets still are quoted at 2.90c, base Pittsburgh, and bolts on the basis of 60 and 10 off for large machine bolts.

Brisk Demand is Continuing

Chicago, Jan. 15.—Specifications for bolts and nuts continue good and although one maker is not finding business up to its liking, the general situation is splendid. Implement makers look for the best season in several years and have been specifying bolts and nuts freely. Specifications from automotive interests are good. Jobbers are specifying freely but apparently stocked well before the recent firming in price. Prices are holding at 60 and 10 off.

Specify Bolts, Nuts RivetsWell

Cleveland, Jan. 15.—Specifications for bolts and nuts are fairly liberal and demand has revived. Automotive interests are the heaviest buyers but other industries are specifying freely, particularly railroads. Prices are firm although on cold punched nuts $4.25 off list has been done. This price applies only on large business and $4 off list is more correctly the market.

Rivet demand is fairly good and most first quarter tonnage has been placed. Little difficulty is met in obtaining 2.90c base Pittsburgh on larger rivets. On small rivets, 65, 10 and 5 off list, has been shaded and 70 and 70 and 5 off has been done.

Prices Are Much Firmer

Philadelphia, Jan. 15.—January nut, bolt and rivet business is more active and if the present volume is maintained, the current month will be the best in more than six months. Prices are firmer than in a long time. The Pennsylvania and Philadelphia & Reading railroads are inquiring for large tonnages of track spikes and track bolts. The first half of January bookings are fully 50 per cent higher than those for the same period of December.

Hoop and Band Buying Is Checked

HOOP PRICES PAGE 197

Pittsburgh, Jan. 15.—Something of a check has taken place on hoop and band buying. Only a few small orders are being placed although specifications from automobile parts makers and other large users are fair. Prices on regular hoops and bands are unchanged at 3.00c although some are endeavoring to maintain a 3.15c base Pittsburgh minimum. On narrow hoops in thinner gages 3.35c to 3.50c base Pittsburgh is being quoted.

Sales of Stock Materials Increase Slowly

WAREHOUSE PRICES, PAGE 250

New York, Jan. 15.—With inventory season drawing to a close, the local warehouse market is more active, and jobbers regard the future as most encouraging. Especially active at this time are shapes, which continue reflection of the heavy building operations in this district. Prices generally are strong, but unchanged.

Stock Inquiries Larger

Philadelphia, Jan. 15.—Iron and steel jobbers report that demand for materials out of stock has swung back to 60 per cent of normal. Inquiries are more numerous and average larger tonnages. Most of these are being closed immediately. Prices are unchanged but firmer.

Buying Is at Higher Level

Cleveland, Jan. 15.—Buying of iron and steel products from local ware-

houses is better than in the past few weeks, with many dealers claiming first-half January business better than any in the same period of the past several months. Buying is opening up somewhat in manufacturing lines, especially where orders are booked by the jobbers for mill delivery. Prices are firmer with no shading being noted.

Trading Recovers from Slump

Detroit, Jan. 15.—Trade in iron and steel jobbing circles has begun to assume larger proportions. The slowing down in the latter part of the year has given way to more activity. Inquiry for bars, bands and some lines of sheets is better. The intense cold weather tended to curtail buying of light structural shapes for small building repair work. Dealers say they look for a resumption of this buying at an early date. Prices are steady.

Steel Castings Bookings Increase Slightly

Washington, Jan. 15.—Slight increase was noted in the sales of steel castings in December, bookings for the month totaling 41,098 tons as compared with 39,660 tons for the month preceding, according to figures of the department of commerce. Sales of railway specialties totaling 15,182 tons in December gained about 18 per cent over November when bookings in this line amounted to 12,916 tons. Operations increased from 40.9 per cent in November to 42.4 per cent in December.

The accompanying figures are based on reports submitted by 65 identical companies with a monthly capacity of 96,900 tons which represents two-thirds of the commercial castings capacity of the United States. Of the total capacity, 38,300 tons are usually devoted to railway specialties and 58,600 tons to miscellaneous castings.

1922	Total net tons	Per cent capacity	Railway specialties net tons	Miscellaneous net tons
July	66,166	68.3	32,372	33,794
Aug.	63,416	65.4	21,843	41,573
Sept.	97,919	101.1	56,781	41,138
Oct.	75,709	78.1	34,276	41,433
Nov.	60,899	62.8	22,131	38,768
Dec.	68,889	71.1	28,271	40,618
1923				
Jan.	100,605	103.8	47,879	52,726
Feb.	90,152	93.0	39,845	50,307
Mar.	143,564	148.2	76,409	67,155
April	90,968	93.9	39,610	51,358
May	89,493	92.4	38,788	50,705
June	84,878	87.6	42,773	42,105
July*	52,066	53.7	16,741	35,325
Aug.	50,515	52.1	18,332	32,183
Sept.	47,574	49.1	21,685	25,889
Oct.	37,446	38.6	9,840	27,606
Nov.	39,660	40.9	12,916	26,744
Dec.	41,098	42.4	15,182	25,916

*Two companies with a capacity of 785 tons per month on miscellaneous castings now out of business.

Bethlehem Adds Capacity

Pittsburgh, Jan. 15.—Operations in steelmaking as far as the Carnegie Steel Co. is concerned are unchanged from a week ago, at 88 per cent with 43 out of 59 blast furnaces active. The Bethlehem Steel Co. commenced operations yesterday in the bessemer department of the lower works of the Cambria plant, after an idleness of several months. It will blow in its No. 9 blast furnace at the Franklin plant later in the month after idleness of several months.

Car Plate Sales Dominant

More Tonnage Placed at Chicago Since Dec. 15 Than in Preceding Seven Months—Pipe Lines, Boats and Barges Also to the Fore

PLATE PRICES, PAGE 197

New York, Jan. 15.—Plate sales here continue as a rule to involve small and moderate size tonnages for quick shipment. The current market continues 2.40c to 2.50c, base Pittsburgh, although attractive tonnages continue to bring a price of 2.35c.

The Bethlehem Shipbuilding Corp. has just closed a contract to construct at its Sparrow's Point plant six steel barges for the Standard Oil Co., New Jersey, for use in the Ohio river service. These will require a fair quantity of plates.

Sales Show Improvement

Boston. Jan. 15.—At least two dealers have experienced improved plate business during the past week, after a period of dullness. Some business has been taken at 2.35c, Pittsburgh but most makers are asking 2.40c.

Sales Picking Up

Philadelphia, Jan. 15.—Plate demand is at least 25 per cent better than it was in the first half of December and 50 per cent better than in the first half of November. Mill operations are more sustained, and open-hearth operations are larger. Demand is restricted practically to small and moderate tonnages for quick shipment. The current market continues 2.40c to 2.50c, Pittsburgh, although 2.35c is on attractive tonnages. Some locomotive and some miscellaneous railroad tonnage has been placed. The Glasgow Iron Works is about to resume operating. It has leased a 112-inch mill at Pottstown Pa., which has been idle for two years. The Sun Shipbuilding Co. has booked five barges for the Canal Transportation Co., New York.

Gas Holders Promise Tonnage

Pittsburgh, Jan. 15.—The only feature of interest in the plate market is the probability of a few gas holders being placed within the next two weeks. These represent a fair aggregate, involving 4300 tons for a 10,000,000 cubic foot holder, and 350 to 400 tons for a 1,000,000 cubic foot holder. As usual, a few individual tanks are up for attention, but these only involve an average of about 300 tons. Plates are firm at 2.50c, base Pittsburgh, and several of the mills report that their fabricating customers have been active since the first of the year on first quarter needs.

Pipe Line Inquiries Out

Cleveland, Jan. 15.—Inquiries for steel for pipe line projects from fabricators in this district feature in the market. Bids are to be taken Jan. 22 by the city of Boston for a 36-inch water line requiring 3000 to 3500 tons. They also will go in about that time for the Clove conduit for the Catskill aqueduct in New York state requiring about 3000 tons of 7/16-inch pipe. The 3000 tons for a water line in Denver previously referred to has been held up temporarily. Lake shipyards are figuring on additional inquiries for freight vessels. At least two boats requiring about 10,000 tons of steel now are up for bids. The general volume of the plate market continues better. Smaller orders are in number with occasional good sized tonnages being placed. Local mills have increased their operations and now are running full. Prices still are subject to variation. The larger mills continue to quote 2.50c, Pittsburgh, on the general run of business but some of the other producers do not hesitate to take business at 2.40c, Pittsburgh, where the tonnage is attractive.

Car Requirements Still Dominant

Chicago, Jan. 15.—Buying of steel plates for railroad freight car construction continues to dominate this market. More plates have been placed for freight cars since the middle of December than in all of the preceding seven months. Cars placed last week in the Chicago district alone call for almost 20,000 tons of plates, shapes and bars. Oil storage tanks are not a market factor now but gasoline interests are inquiring for numerous small storage tanks. Makers of plates are comfortably booked for the first quarter. The plate price is 2.60c, mill.

Valley Operations Are Much Increased

Youngstown, O., Jan. 15.—Confidence, backed by growing backlogs of unfilled tonnage, is spurring operation into higher ground. At the beginning of this week 84 per cent of independent open-hearth capacity was engaged, the highest rate reached since Sept. 1923, when 86 per cent was being charged. The present rate is an increase of 21 per cent since the opening of this year. Open-hearth schedules of the Youngstown Sheet & Tube Co. were advanced from 13 to 18 units and of the Republic Iron & Steel Co. from 12 to 13 units while the Trumbull Steel Co. continues with seven active units and the Sharon Steel Hoop Co. 5, making a total of 43 of the 51 independing open hearths in this district.

Seventy per cent of sheet mill capacity is scheduled, compared with 66 per cent a week ago and 56 two weeks ago, an increase of 14 per cent since this year opened. This is the highest rate of operation reached by sheetmakers here since Aug. 1, 1923, a period of over five months, when 73 per cent of capacity was engaged. The Newton Steel Co. advanced its schedule from 16 to 17 sheet mills and the Youngstown Sheet & Tube from 16 to 20 while the Trumbull Steel Co. is operating 13 units, the Sharon Steel Hoop Co. nine and the Mahoning Valley Steel Co., the Republic Iron & Steel Co. and the Falcon Steel Co. eight each, a total of 83 of the 118 district mills. Plans of the Republic company calls for the resumption of six additional sheet mills next week.

Concrete Inquiries Gain

Reinforcing Bar Sales Continue Unusually Good for Winter Season—Fabricators Report Heavier Business in Sight for Spring

REINFORCING BAR PRICES, PAGE 197

Cleveland, Jan. 15.—Prospects for reinforcing bar business in this territory are becoming brighter as spring building programs mature. Heavy work is being figured at Louisville, Ky., where two hotels and a Ford Motor Co. assembly plant will require bar tonnage. The Ford assembly plant at Philadelphia now in the market will require 1000 tons. The American Woolen Mills Co., through Turner Construction Co., has awarded from 150 to 200 tons of bars for a building in Louisville. Locally, 250 tons for the superstructure of the Baldwin reservoir project, was awarded Bourne-Fuller Co. Bars out of stock continue 2.75c, Pittsburgh, with no shading. The 2.40c, Pittsburgh, mill price on new steel bars is being cut, with 2.30c being a common quotation. Some sellers report less has been done. Rail steel bars continue to be quoted at 2.10c, mill, with no tonnage of sufficient size being in the market to test its strength. New steel bar mills are competing actively for rerolled business.

Inquiry Promises Better Buying

New York, Jan. 15.—Demand for concrete reinforcing bars is becoming more active. An increased number of projects is up for bids so that it is expected that lettings over the next few weeks will show an increase. Prices are somewhat firmer and it is difficult to shade 2.40c, base Pittsburgh, on mill deliveries. The Pittsburgh warehouse market continues 2.50c to 2.75c, base Pittsburgh, while stocks in New York warehouses generally are held at 3.10c, f.o.b. warehouse.

Pending Work Total Large

Pittsburgh, Jan. 15.—Several jobs calling for the use of reinforcing concrete bars are pending in this section which probably will be closed within the coming few days. One of these, a nearby bridge, calls for 300 to 400 tons; another is the hall of chemistry building, University of West Virginia, Morgantown W. Va., 400 tons; and local warehouses for the Kaufman & Baer Co., the Kaufman Co., and the Rosenbaum Co., are early date possibilities, each taking between 500 and 1000 tons. Dwight P. Robinson Co. is in the market for 100 tons and numerous smaller jobs likewise are before the trade. One seller maintains a 2.40c, Pittsburgh, price on its stock but shortly may advance since this is the same as the mill base. Another already has notified its customers that on Jan. 21 all outstanding quotations below 2.65c, base Pittsburgh on warehouse stocks will be withdrawn and from that date on the stock price will be a 2.65c, base Pittsburgh, minimum. One local interest is disposing of its stock of twisted square bars at low figures but replacements will be on a much higher basis. All awards lately have been small, below 100 tons each.

Warehouses Shading 3.00c Price

Chicago, Jan. 15.—Warehouses quoting 3.00c, Chicago, for reinforcing concrete bars are meeting with competition of interests bidding as low as 2.50c, Chicago warehouse. The 243 tons awarded to A. M. Castle & Co. for Illinois highway work went on the basis of 2.50c, Chicago mill. The bid of Olney J. Dean & Co., which won an award of 145 tons, also for Illinois highway work, was 2.75c, Chicago warehouse. Some warehouses continue to quote 3.00c, Chicago. Not so much business has come out in the past week as warehouses expected. The Monon railroad award of 400 tons is anticipated this week.

Small Lots Prevail

Cincinnati, Jan. 15.—Practically each of the reinforcing concrete bar jobs now developing in this district requires a maximum of from 40 to 50 tons of bars. This business aggregates a good tonnage. The largest transaction of the week was the purchaes of 500 tons by the Ferro Construction Co. from the Bourne-Fuller Co. for first quarter delivery. Reinforcing bar interests generally assert that prices are firm, despite the little business being transacted.

CONCRETE CONTRACTS PLACED

Awards this week ..... 4,979 tons
Awards last week ..... 5,847 tons
Awards three weeks ago..... 605 tons

500 tons, Ferro Construction Co., Cincinnati, to Bourne-Fuller Co.
500 tons, Beaumont high school, St. Louis, to Scullin Steel Co.
350 tons, building for New York Telephone Co., Second avenue and Thirteenth street, New York, to Kalman Steel Co.; general contractor, Industrial Engineering Co.
350 tons, Westinghouse Electric & Mfg. Co., Emeryville, Cal., to Edw. L. Soule Co.
300 tons, service building for board of education, Milwaukee, to Corrugated Bar Co.
250 tons, superstructure for administration building and filter houses, Baldwin reservoir project, Cleveland, to Bourne-Fuller Co.
250 tons, warehouse, Sixteenth and Alabama streets, San Francisco, to Edw. W. Soule Co.
250 tons, building for Niss Furniture Co., Milwaukee, to Corrugated Bar Co.
243 tons, Illinois highway work, to A. M. Castle & Co.
236 tons, Empire Construction Co., Des Moines, Iowa, for 17 miles of road paving, Greene county, Iowa, to Des Moines Steel Co.
200 tons, church, Steiner and Bush streets, San Francisco, to Truscon Steel Co.
160 tons, Interstate building, 3937 Germantown avenue, Philadelphia, to Concrete Steel Co.; general contractor, Industrial Engineering Co.
150 to 200 tons, building for American Woolen Mills Co., Louisville, Ky., awarded to independent fabricator through Turner Construction Co.
150 tons, apartment house, Union and Polk streets, San Francisco, to Edw. L. Soule Co.
150 tons, office building, Seventeenth and Broadway, Oakland, Cal., to Edw. L. Soule Co.
145 tons, Illinois highway work, to Olney J. Dean & Co.
125 tons, Francisco school, San Francisco, to Truscon Steel Co.
120 tons, Armstrong high school, Washington, to Concrete Steel Co.
100 tons, Los Gatos high school, Los Gatos, Cal., to W. S. Wetenhall Co.
100 tons, garage for Standard Oil Co., Newark, N. J., to Igoe Bros. and Kalman Steel Co.
100 tons, filtration plants at Carcon City, W. Va., and Erie, Pa., to Kalman Steel Co.
100 tons, added to previous orders for power plant near Pittsburgh, to Concrete Steel Co.
100 tons, bridge at Milford, Wis., to Corrugated Bar Co.

CONCRETE CONTRACTS PENDING

800 tons, government hospital, Livermore, Cal.; general contract awarded but steel not yet placed.
700 tons, building for Blake, Moffitt & Towne, Los Angeles; bids in.
325 tons, West Spokane street bridge, Seattle; bids in.
200 tons, administration building, Alameda county hospital, California; bids in.
200 tons, Louisville & Nashville railroad warehouse, New Orleans; bids in.
135 tons, Superior exchange building for Illinois Bell Telephone Co., Chicago.
130 tons, warehouse for W. R. Kinney Co., San Francisco; bids in.
125 tons, hotel at Marysville, Cal.; bids in.
100 tons, telephone exchange, Memphis, Tenn.; bids in.
100 tons, Crocker Estate building, San Francisco, bids in.
100 tons, Knights of Columbus building, San Jose, Cal., bids being received.

Pipe Mills

Book More Orders for Oil Country Goods—Cast Buying Better

PIPE PRICES, PAGE 197 AND 252

Pittsburgh, Jan. 15.—Decided improvement is noted in the tubular goods market. Oil country jobbers are placing numerous orders for single car-loads up to 300 tons at a time. Many of these are for sizes in lapweld pipe which always are difficult to obtain in times of heavy pipe mill production, but other sizes as well are being ordered for stocks against the coming spring demand, which is expected to be heavy. Best deliveries in lapweld pipe are from three to four weeks while in buttweld six to eight weeks is required. Demand for standard full weight merchant pipe, particularly from jobbers, has picked up, one valley producer, having specifications for the first 12 days of January representing an aggregate in excess of its possible output for that period. One large producer in Youngstown has refused at least two opportunities to add to its list of customers and likewise has turned down considerable business on which immediate deliveries were wanted. Line pipe demand shows no real life. Slight concessions are available in at least one direction since the South Penn Oil Co. is understood to have placed its 20 miles of 8-inch with a West Virginia independent. Only one or two formal inquiries for line pipe are before the trade but more are expected to develop early in the spring should the plans of oil producers fully materialize in regard to expansion and drilling. Card discounts of April 19, 1923, still prevail.

Municipal Demand Still Sags

New York, Jan. 15.—Trading in cast iron pipe continues to be restricted largely to private buying, although substantial municipal inquiry is expected to develop at any time. Spot prices remain practically unchanged at $60.60 to $61.60 for 6-inch pipe and over, and $65.60 to $66.60 on 4-inch pipe, while prices on material for shipment over the winter months are at concessions of about $1 on the smaller pipe and $2 to $3 on the larger.

Small Towns to Buy Shortly

Chicago, Jan. 15—Many small municipalities are reported planning to

enter the market shortly for their 1924 cast pipe needs but definite dates have not yet been fixed. Utilities continue to buy heavily and the amount of pipe placed for the first half of 1924 exceeds largely the pre-war average, for that period. The 700 tons at Logansport, Ind., is expected to go to the United States Cast Iron Pipe & Foundry Co. Prices are firmer with the tendency toward premiums.

Lettings Are More Numerous

Birmingham, Ala., Jan. 14.—Cast iron pipe manufacturers in the Birmingham district are receiving more awards now and indications point to an impetus in buying through the winter. Shipments of pipe more than equal the output and stocks on yards are low.

CAST IRON PIPE PLACED

1400 tons, Toledo, O., to National Cast Iron Pipe Co.
1522 tons, Minneapolis, Minn., to American Cast Iron Pipe Co.
634 tons, San Francisco, to American Cast Iron Pipe Co.
163 tons, work for Columbus, O., to American Cast Iron Pipe Co.
110 tons, Seattle, Wash., to American Cast Iron Pipe Co.

CAST IRON PIPE PENDING

2650 tons, 600 tons 6-inch, 900 tons 8-inch, 500 tons 12-inch, and 500 tons 16-inch pipe, also 150 tons special castings, for work in Milwaukee; bids in Jan. 24.
2500 tons, Milwaukee, bids in Jan. 24.
2250 tons, 4, 6, 8 and 10-inch class "C" pipe for Los Angeles; bids in.
1600 tons, Cincinnati, bids in.

Specify Tin Plate

March Orders Fully Covered and First Quarter Production All Sold

TIN PLATE PRICES, PAGE 197

Pittsburgh, Jan. 15.—Specifications from many tin plate users due today for March shipment have already been received. With one producer, three of its large customers already have specified for March delivery also and 1,500,000 base boxes additional are expected to be specified within the next two or three days. By the end of this week the American Sheet & Tin Plate Co., as well as independents, will have March output specified fully. The former's production for second quarter already is obligated but April specifications are not due until Feb. 15. Larger tin plate consumption is promised for 1924 and is practically assured if the present rate of absorption by canmakers is any criterion. With heavy backlogs tin plate prices are firm on the basis of $5.50 per base box of 100 pounds, Pittsburgh. On several days recently the American Sheet & Tin Plate Co., operated 97 per cent of its tin mills. The average for the past week is not that high. Independents are averaging between 90 and 95 per cent, some operating practically full. Relatively few inquiries are appearing since most buyers have protected themselves. One piece of new business involving 80,000 base boxes was recently closed by a large maker here.

The Southern Ferro-Alloys Co., of Chattanooga, Tenn., has announced an increase in the company's capital stock of from $210,000 to $300,000, and is planning extension of the business during the present year.

Sheet Demand Increases

Mills Acquiring Good Backlogs, and Market Shows More Firmness—Specifications Larger, Especially for Fine-Finished Stock

SHEET PRICES, PAGE 197

Pittsburgh, Jan. 15.—Much of the present sheet business being written on the books of sheetmakers is in the form of actual specifications against contracts which as yet have not been signed. This is particularly true of full finished automobile sheets, the buying of which is continuing at a high rate. Stocks everywhere are low and all purchases are for immediate shipment. Consumption apparently is proceeding at a high rate and this is true of other lines since diversified buying is the rule among practically all sheet producers. The specifications on full finished sheets usually involve 1000, 2000 or 3000 tons at a time, and are pleasing to the mills.

Some sheetmakers claim that with but one exception every consuming line on its books is represented in the present buying movement. This exception is small bolted portable oil tanks, the manufacture of which has been at a low point for the past five or six months due to the condition of the oil industry. Improvement in the latter, however, bespeaks an early buying movement in these tanks which will mean an increased tonnage of blue annealed sheets. Early this week two large and several smaller galvanized sheet specifications were received here, the two mentioned involving a tonnage well in excess of 3000. Stove and range manufacturers and agricultural implement makers are furnishing their share of the going business. Shipments this month hardly will reach the total established in December, when the highest total with one exception was reached by some large producers.

The American Sheet & Tin Plate Co. is increasing its operations a trifle over last week, possibly to around 85 per cent. The independents' average is hardly that high, about 80 per cent being general. Prices are fairly firm, only an exceedingly small percentage of the output of black sheets being available at under 3.85c; blue annealed being firm at 3.00c; galvanized being available only occasionally at under 5.00c, and full finished automobile sheets having firmed up considerably on the basis of 5.35c until between 90 and 95 per cent of the full finished sheet output of the country is being sold on that basis. Sheet manufacturers are greatly encouraged over the prospects for the first half and report that both users and jobbers are buying heavily for first quarter delivery with some willing to talk about second quarter requirements, since a bituminous coal strike for April 1 is threatened.

Sheet Sales Improve

Boston, Jan. 15.—Sheet sales throughout the New England district improved during the past week, and while not exceptionally heavy are holding to a good level for this district. Prices are unchanged.

Market Is Brighter

Youngstown, O., Jan. 15.—A decidedly better outlook is apparent in the sheet market in the Mahoning valley. Recent entries in order books of certain producers have afforded a good volume of accumulated tonnage and on some specifications quotations are being submitted against a delivery of four to six weeks. A few makers, however, are in a position to entertain business in certain gages for shipment at an attractive date. Reflecting the betterment in this direction sheet mill operations have advanced to 70 per cent of district capacity, the highest in over five months. With a few weeks rollings firm in hand, the majority of makers here, if not all, have brought quotations in line to conform to the full market of 3.00c on blue annealed, 3.85c on black and 5.00c on galvanized, base, Pittsburgh. The price of 3.75c on black sheets has not disappeared entirely but with order books taking on more semblance of a backlog producers are viewing the situation with more confidence and are not so eager to entertain black business at $2 a ton under the full market level Further strength is noted in the galvanized market. Tonnage of this grade is not now obtainable below 5.00c, Pittsburgh. Consumers of coated stock have been advised recently to get under cover for first quarter requirements as a number of mills have discontinued the manufacture of galvanized sheets and have disposed of their galvanizing equipment. Advice in this direction apparently has been followed for an attractive volume of business has been entered by mills in this district within the past 10 days. High-grade consumers have come into the first quarter market on a small scale but a number of the larger users have not yet covered. Action in the direction is contemplated within the next two weeks. Meanwhile sufficient tonnage has accumulated to schedule high-grade mills a few weeks ahead. Quotations on this grade are unchanged at 5.35c, Pittsburgh for No. 22 gage.

Specifications and Orders Heavy

Chicago, Jan. 15.—Makers of sheets are booked nearly full for the first quarter. Specifications are heavy and makers are able to dispose of practically all of current production. Jobbers are buying less heavily at present for they have placed all of their first quarter requirements. Prices are firm at 3.00c, Pittsburgh, for blue annealed, 3.85c, for black, and 5.00c, for galvanized.

Demand Increases 25 Per Cent

Philadelphia, Jan. 15.—Sheet demand in the first half of January is approximately 25 per cent larger than it was in the first half of December. Blue annealed is the strongest at 3.00c, Pittsburgh, equivalent to 3.3?c, Philadelphia. Black sheets are easier. On the more attractive tonnages prices range from 3.70c to 3.75c, Pittsburgh. In some cases 3.65c is quoted. Galvanized sheets continue at 4.00c to 5.00c, Pittsburgh.

Shape Inquiries Heavier

Enormous Spring Building Programs Cause Cheerfulness Among Fabricators—Larger Tonnage Jobs Continue to Be Brought Out

STRUCTURAL SHAPE PRICES, PAGE 197

New York, Jan. 15.—Advances in fabricated material have tended to check, at least temporarily, heavy structural buying in this district. The breadth of the upward movement of late and the sharpness of advances in many instances have caught buyers unaware, with a result that many are now holding off, pending efforts to develop, if possible, lower prices.

Increases in prices on lofts recently have been more pronounced than in other lines of work, particularly apartments. This has been due more to the fact that until recently prices on fabricated material for lofts have not shown the strength prevailing on other classes of work. It is difficult to establish at all definitely the market on these various classes. Significant of this is the fact that on one apartment house job recently, bids showed a range of fully $10 a ton.

This fact also is interesting inasmuch as it indicates an unusually good position on the part of some fabricators, who entertain strong views as to prices. About a month ago, on a job which corresponded somewhat to a loft building, seven leading fabricators submitted bids which fell within a range of less than $5.

Virtually all fabricators in this district have orders equivalent to three months capacity, and some are in a much better position. The mills are more active but because some structural jobs have been taken on a pound basis for which specifications are not yet available, shapemakers are not as busy as they might otherwise be. Shape prices are strong at 2.50c, Pittsburgh.

Larger Contracts Expected

Boston, Jan. 15.—Fabricators report an improvement in number of small orders for structural steel, but large contracts still are unplaced. A contract for 300 tons for an apartment house in Boston was the largest award of the week. Plain material prices are firm at 2.40c, Pittsburgh.

Large Awards Still Deferred

Pittsburgh, Jan. 15.—Awards of large tonnages of structural shapes continue to be deferred in this immediate vicinity although some fabricators have closed with the mills on their first quarter needs. A few have already issued January specifications indicating that they are at work on their backlogs of orders. New inquiries keep up at a fairly high rate and all estimating departments are said to be busy. Structural shape prices are firm at 2.50c, base Pittsburgh. It is understood that two bridges at Buffalo involving a total of 2000 tons on which a local independent bridge company was reported last week to be low bidder will be readvertised. The Citizens' Title & Trust Co., Uniontown, Pa., is shortly to ask for bids on an 8-story bank building. The Chesapeake & Potomac Telephone Co. is to erect a building at Huntington, W. Va., to cost $1,400,000. Bids close Feb. 11 on structural steel for lock No. 46, Ohio river, by the United States Engineers, Box 72, Louisville, Ky. The local board of education announces it will take bids shortly for the Squirrel Hill high school.

Inquiry Has Picked Up

Cincinnati, Jan. 15.—Structural shape inquiry has picked up and business here is better. Among the inquiries which have come to this market during the week is one for 1400 tons from the Louisville & Nashville railroad, for the erection of a freight house at New Orleans. The Indiana state agricultural commission is going to erect a number of farm houses on its premises near Indianapolis which combined involve about 600 tons. The only letting of size was that of 215 tons for a highway bridge in Marion county, Indiana.

Larger Projects Coming Out

Chicago, Jan. 15.—Barring possibly the recent lettings of freight cars, the structural market is easily the most active of all Chicago steel markets. Awards since Jan. 1 have not made an unusually large total but projects scheduled to come early in January are materializing. Plans now are out for the new Palmer House, which will require 17,000 tons. A project somewhat in the future is the rebuilding of the Congress hotel, the first unit of which will take 3000 tons. Before the end of the year work is expected to begin on a new railroad terminal to replace three present stations; this should be better than a 15,000-ton job. Each week is expected to see both awards and pending projects on the increase. Bids have gone in on 10,000 tons for the Tribune Tower. The plain material price continues to be 2.60c, Chicago.

Heavier Tonnages In Sight

Cleveland, Jan. 15.—An unusually heavy spring building program is expected by local fabricators as inquiries for structural shapes become more numerous. Among the larger projects before the market are a $1,500,000 plant in Cincinnati for A. Nash Tailoring Co.; the Mt. Sinai and St. Lukes hospitals groups, Cleveland, involving several millions expenditure; United Banking & Savings Co., Cleveland, taking 2000 tons and additional Louisville & Nashville railroad bridgework requiring 6500 tons. A heavy tonnage of shapes is expected to be needed for the Union terminal project here during the coming years, bids on a part of which are expected to be asked within a few months. Reports are current of a large power plant to be built at Findlay, O., to require 2000 tons of bars and a round tonnage of shapes. American Bridge Co. was awarded 2300 tons for the Citizen's hotel, Louisville, Ky. The Kentucky hotel, also in Louisville, will require about 2000 tons of shapes. The Union Land & Building Co. building, Youngstown, is in the market for 475 tons of shapes. Prices continue firm at 2.50c base Pittsburgh, with belief by many that the price on second quarter business will be higher.

Bookings Higher than December

Philadelphia, Jan. 15.—Structural shape bookings in the first half of January were about 50 per cent above those for the same period of December. More of the business is coming from the South and the North than is coming from the immediate Philadelphia district. Indications point to a larger demand locally. The market continues from 2.40c to 2.50c, Pittsburgh, on plain material, with the 2.35c, Pittsburgh, quotation somewhat less noticeable.

STRUCTURAL CONTRACTS PLACED

Building awards this week ..... 10,576 tons
Building awards last week..... 43,333 tons
Building awards two weeks ago.... 11,520 tons

2300 tons, Citizens hotel, Louisville, Ky., to American Bridge Co.
2100 tons, Levy loft building, Eighth and Thirty-eighth street, New York, to Harris Structural Steel Co.
1700 tons, North Side theater, Chicago, to Morava Construction Co.
700 tons, Bing & Bing apartment, East Sixtieth street, New York, formally awarded to Hedden Iron Construction Co.; reported in recent issue as tentatively placed with this fabricator.
700 tons, buildings for Mt. Vernon Car & Mfg. Co., Mt. Vernon, Ill., to McClintic-Marshall Co.
600 tons, miscellaneous bridges for Baltimore & Ohio railroad, to American Bridge Co.
505 tons, auditorium extension of Joliet township high school, Joliet, Ill., to Duffin Iron Works.
300 tons, Westinghouse Electric & Mfg. Co. plant, Emeryville, Cal., to Judson Mfg. Co.
300 tons, plant for Milwaukee Structural Steel Co., Milwaukee, to own shop.
300 tons, apartment building on Charles street, Boston, to independent fabricator.
250 tons, Pennsylvania railroad shops, Olean, N. Y., to Kellogg Structural Steel Co.
229 tons, kiln building, Standard Sanitary Mfg. Co., Kokomo, Ind., to unnamed fabricator.
215 tons, bridge, Marion County, Ind.; to Indiana Bridge Co.
165 tons, crane runways for Long Bell Lumber Co., Portland, Oreg., to Pawling & Harnischfeger Co.
158 tons, girder spans for Great Northern railroad, to American Bridge Co.
155 tons, memorial building, Racine, Wis., to C. Henneeke Co., Milwaukee, Wis.
150 tons, ore trestle at Hibbing, Minn., for Pickands, Mather & Co., to Lakeside Bridge & Steel Co.
150 tons, engine room for Lehigh Portland Cement Co., Mason City, Iowa, to Worden-Allen Co.
150 tons, Telephone Exchange building, Santa Rosa, Cal., to Golden Gate Iron Works.
149 tons, Catholic archdiocessean seminary, Area, Ill., to unnamed fabricator.

STRUCTURAL CONTRACTS PENDING

17,000 tons, Palmer House, Chicago; bids being taken.
10,000 to 11,000 tons, municipal central repair shop, New York; Willis Construction Co. low on general contract.
10,000 tons, Tribune Tower, Chicago; bids in.
6500 tons, bridgework for Louisville & Nashville railroad; bids being taken. This is in addition to 2800 tons previously reported as pending.
3000 tons, Museum of History, Los Angeles; Llewellyn Iron Works, low bidder.
2500 tons, Keeler hotel, Albany, N. Y.; project revived.
2433 tons, three bridges for Pueblo Conservancy district, Pueblo, Colo.; bids in.
2000 tons, transmission towers for Hetch Hetchy project, San Francisco; Pacific Steel Co. low bidder.
2000 tons, Kentucky hotel, Louisville, Ky.; bids being taken.
1700 tons, foundation for Lake Shore Athletic club, Chicago; bids in.
1500 tons, Elk street viaduct, Buffalo; Independent Bridge Co., Pittsburgh, low bidder.
1400 tons, freight house, Louisville & Nashville railroad, New Orleans; bids in.
1200 tons, loft, Thirty-eighth street, New York; Blum & Blum, 505 Fifth avenue, that city, architects.
1000 tons, Bank of North America building, Sixteenth and Arch streets, Philadelphia;

pending.

1000 tons, Tacoma Citizens hotel, Tacoma, Wash.; Pratt & Wilson, general contractor.

1000 tons, Chesapeake & Potomac Telephone Co., Huntington, W. Va.; bids to be asked.

900 tons, building for the Co-operative Building & Loan association, New York; pending.

900 to 1000 tons, school No. 80, New York; Newenhous Co., Inc., 316 East 161st street, that city, general contractor. General contractors' bids scheduled for opening at same time on schools Nos. 201 and 197, involving 900 to 1000 tons, thrown out owing to insufficient number of bids.

800 tons, Bankers Realty building, Worcester, Mass.; bids being taken. Foundation contract let to Eastern Bridge Co.

750 tons, Squirrel Hill high school, Pittsburgh; bids to be asked.

700 tons, Martha Realty Co. building, Kansas City, Mo.; bids in.

700 tons, apartment Eighteenth and Chestnut streets, Philadelphia; pending.

600 tons, loft building for Joseph Siegel, garment district, New York; pending.

600 tons, apartment for Post & McCord, 101 Park avenue, New York; erector's bids being taken.

600 tons, Balmar Co. building, Baltimore; bids asked.

600 tons, building, Indiana state agricultural commission, Indianapolis; bids being received.

600 tons, high school at Ironwood, Mich.; bids in.

500 tons, Erie county office building; Buffalo, C. H. Everitt, general contractor.

500 tons, power house for Midwest Refining Co., Denver; bids in.

500 tons, Elk-Abbott street bridge, Buffalo; Independent Bridge Co., Pittsburgh, low bidder.

500 tons, building for Citizens' Title & Trust Co., Uniontown, Pa.; bids to be asked.

500 tons, plant for General Bakeries Co., Washington avenue, Brooklyn, N. Y.; bids asked.

475 tons, Union Land & Building Co. building, Seventy-second street, New York; pending.

460 tons, Union Land & Building Co. building, Youngstown, O.; bids in.

450 tons, bridge for Central Railroad of New Jersey, Allenton, Pa.; bids rejected.

400 tons, building for Dayton & Troy Automobile Co., Second and St. Clair streets, Dayton, O.; H. R. Blagg Co., general contractor.

400 tons, extension to boiler shop, Crane Co., Chicago; bids in.

400 tons, boiler house, University of Rochester, Rochester, N. Y.; F. L. Hughes, low bidder.

400 tons, addition to East Avenue and Gibbs Street building, Rochester, N. Y.; F. L. Hughes, low bidder.

400 tons, Cornell union, Ithaca, N. Y.; pending.

400 tons, apartment for Spotts & Starr, Times Square building, at Fifty-third street and Park avenue, New York; pending.

300 tons, ice plant, at Dunnellen, N. J.; L. M. Neckerman, 103 Park avenue, figuring general contract.

300 tons, several buildings for the Mutual Potteries Co., Trenton, N. J.; pending.

250 tons, lock gates for dams for United States Engineers, Louisville, Ky.; Penn Bridge Co., low bidder.

250 tons, state hospital addition, Norwich, Conn., pending.

250 tons, lock No. 46 Ohio river; bids close Feb. 11 by United States engineers, Box 72, Louisville, Ky.

250 tons, St. Joseph hospital, Reading, Pa.; bids asked.

200 tons, sheet piling for United States Engineers, Box 72, Louisville, Ky.; bids close Feb. 5.

200 tons, bridges at East Sparta and Navarre, O.; pending.

150 tons, motion picture theater, Fifty-first street, New York; general contractors' bids asked.

150 tons, Bennett Hall, University of Pennsylvania, Philadelphia; pending.

135 tons, bank additions at Williamsport, Pa.; pending.

100 tons, First Congregational church, Norwich, Conn.; pending.

Tonnage not stated, bridge across Stillaguamish river for Snohomish county, Wash.; bids to be taken by M. M. Caldwell, Seattle, engineer.

Tonnage not stated, $1,500,000 medical arts building, Seattle; pending.

Tonnage not stated, million-dollar temple for Eagles, Seattle; bids to be asked soon.

Tonnage not stated, viaduct approach to Spokane street bridge, Seattle; pending.

Unnamed tonnage, station for Boston & Albany, Springfield, Mass.; bids asked.

Unnamed tonnage, high school, Amsterdam, N. Y.; bids asked.

Roads Buy More Cars

Pacific Fruit Express Allocates 3057 Refrigerators—Western Mill Books 10,000 Tons of Rails—Track Accessories Demand Heavy

RAILROAD TRACK MATERIAL PRICES, PAGE 197

New York, Jan. 15.—Although car buying still is restricted, the placing of 3057 refrigerator cars by the Pacific Fruit Express Co. has brought total business up higher than that of a week ago. Inquiry is light. The locomotive market is featured by the placing of 15 locomotives by the Canadian Pacific with the Montreal Locomotive Works. The Georgia, Florida & Alabama has placed two locomotives with the Baldwin Locomotive Works.

The Baldwin Locomotive Works has booked five locomotives for the Argentine State railways, two for the Mobile & Ohio, one for the San Joaquin & Eastern and one for the Texas-Mexican railroad. American Locomotive Co. booked one for the Toledo, Angora & Western.

Railroad Buying Quieter

Boston, Jan. 15.—Buying of railroad material has been relatively quiet during the week in New England. The Maine Central placed its formal contract for 1924 rails. A street railroad company bought a moderate tonnage of track fastenings. Several thousand tons of girder rails were expected to be placed shortly.

Weakness Again Is Shown

Pittsburgh, Jan. 15.—Practically the only finished steel product to show weakness is billet-rolled light rails. This product again is selling at 2.15c, base Pittsburgh, instead of 2.25c, although one or two makers continue to maintain the latter figure. Orders taken at the 2.15c price this past week have been fairly numerous although individually they call for small tonnages. Some coal companies have ordered lots of 100 to 300 tons at a time. The rerolled light sections recently carried prices as low as 1.75c to 1.85c although some makers are endeavoring to strengthen their price position and now ask 2.00c to 2.15c.

Track accessory sellers have been fairly active, orders having recently been distributed by the New York Central, Big Four and Pennsylvania railroads involving a large aggregate tonnage. The Big Four's original inquiry called for 8000 tons while the Pennsylvania is understood to have closed on the greater portion of its inquiry for 40,000 tons. Prices are unchanged on the quoted bases.

Are Booked for First Half

Chicago, Jan. 15.—Two builders of railroad freight cars in the Chicago district now have sufficient business to carry them entirely through the first half year. Placements of the past week were the taking of 1000 steel underframes by the Pressed Steel Car Co. for each of the Northern Pacific railroad and the Fruit Growers Express. A large part of the 3057 refrigerator cars placed by the Pacific Fruit Express will be built in this district. The Santa Fe railroad's item of $22,000,000 for equipment in its 1924 budget will be expended, it is understood, for 5200 freight cars and 57 locomotives. An inquiry is afloat for 200 gondolas for exportation to China.

The Minneapolis & St. Louis railroad has placed 5000 tons of rails with the leading independent, which is now booked up on rails through the third quarter. The leading interest took about 10,000 tons last week. The Soo Line is getting ready to buy but has not yet decided upon the tonnage.

The leading maker has booked 6500 tons of tie plates in the last week, divided into several orders. The Soo Line is inquiring for a good tonnage of tie plates and other track fastenings. Business in general has been good without any unusually large inquiries.

Plans 1924 Improvements

St. Louis, Jan. 15.—The Missouri, Kansas & Texas railroad contemplates the expenditure of $5,500,000 in 1924 mostly for improvements on locomotives, cars, shops and round houses. Among the larger items are $2,460,000 for improvements to freight cars, 500,000 for improvements on passenger cars and $570,000 for improvements on locomotives. It is also intended to expend $687,000 for yard and line revision at points, $43,000 for substituting heavy rail for light rail; $250,000 for track ballasting and $16,700 for improving freight houses.

CAR ORDERS PLACED

Pacific Fruit Express, 3057 refrigerator cars, distributed as follows: 957 to Pacific Car & Foundry Co., 800 each to Pullman Co. and Standard Steel Car Co., and 500 to General American Tank Car Corp.

Northern Pacific railroad, 1000 steel underframes, to Pressed Steel Car Co.

Fruit Growers Express, 1000 steel underframes, to Pressed Steel Car Co.

Louisville, Henderson & St. Louis railroad, 20 ballast cars to American Car & Foundry Co.

Lehigh Valley, 200 additional car repairs, to American Car & Foundry Co.

Goodwin, Gallagher Sand & Gravel Co., Port Washington, Long Island, N. Y., 12 hoppers to Magor Car Corp.

Cuba Northern, seven coaches, to American Car & Foundry Co.

Cuba railroad, two coaches, to American Car & Foundry Co.

Nassau Sand & Gravel Co., Port Washington, Long Island, N. Y., unstated number to Magor Car Corp.

Seaboard Air Line, 932 flat car bodies, to unnamed builder.

Illinois Traction Co., 100 box cars, to American Car & Foundry Co.

CAR ORDERS PENDING

Pennsylvania railroad is expected to close this week on its inquiry for 3000 cars.

Southern Pacific railroad, 66 passenger cars; pending.

Mesabi Iron Co., 25 Broad street, New York, 10 to 30 dump cars; bids asked.

Resigns From Commission

Washington, Jan. 15.—Victor Murdock has resigned from the federal trade commission, effective Feb. 1, to return to newspaper work. He was appointed by Ex-president Wilson in February, 1919. Mr. Murdock and Nelson B. Gaskill voted against issuing a complaint against the United States Steel Corp. in the Pittsburgh basing point case.

The rebuttal by the government in the basing point hearings probably will begin Feb. 15.

The Nonferrous Metals

Declines in Foreign Exchanges Bother Metals, Especially Copper—Tin and Lead Higher But Zinc Easier

	Copper—Electro delivered	Copper—Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Jan. 9	12.75	13.00	48.50	8.20	6.45	26.50	10.00	29.00
Jan. 10	12.70	12.87½	48.12½	8.12½	6.45	26.50	10.00	29.00
Jan. 11	12.62½	12.87½	48.50	8.25	6.40	26.50	10.00	29.00
Jan. 14	12.50	12.75	48.75	8.25	6.40	26.50	10.00	29.00
Jan. 15	12.50	12.75	49.25	8.25	6.35	27.00	10.00	29.00

†Outside market quotation.

NEW YORK, Jan. 15.—Weakness in foreign exchange rates exerted a depressing influence on the international metal markets the past week, reducing foreign price equivalents in our currency faster than the foreign markets could adjust to the new rates.

Copper, in particular, was affected by the sharp declines in French francs to new low levels for all time and by the decline in sterling to new low levels for two years. During the first 11 months of 1923 France, Germany and Great Britain took 64 per cent of the exports of copper from this country and in November France alone took 40 per cent of our export copper. The price of electrolytic has dropped to 12.50c. delivered, in the American market, with a moderate business at this level. Business has been done for several months ahead at this level. Casting declined to 12.25c. refinery; lake to 12.75c. Export business has been done at 12.62½c. c.i.f., foreign port, in electrolytic The Orient has inquired for large lots of copper, one inquiry alone involving 1800 tons. Copper and brass products base prices were reduced ½ cent Jan. 11.

The zinc market has experienced active buying by galvanizers for first quarter shipment, but the past two days the market has been quiet and prices eased to 6.35c, East St. Louis, for prompt shipment. A fair interest also has been shown in brass special, at 10 points premium over prime western. The December statistics of the American Zinc institute showed an increase in stocks of 5674 tons, but on Dec. 31 were less than one month's supply. December deliveries increased a little.

The lead market has continued extremely strong, with sales of January and February shipment at 8c, East St. Louis and 8.25c, New York, while March-April shipments have sold at 7.90c, East St. Louis, the contract price of the leading interest, established Jan. 10.

Tin prices have risen over 49.00c for spot in the face of declining exchange rates. Spot has been commanding a premium of ½ cent in New York, due to scarcity of January arrivals, but no immediate pinch for tin is manifest. January deliveries are estimated to be not over 5200 tons, probably less as stormy weather is delaying some steamers.

Antimony has held firm at 10c, duty paid, with a fair business.

Virgin ingot aluminum has been scarce in the outside market and commanding fancy premiums, as high as 27c and more being paid for the 98 to 99 per cent grade and above 28c paid for 99 per cent.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min..	20.50
High brass	17.25
Zinc, ga. 9 to 18 (plates ½c less)	9.50
Lead, full sheets (cut ¼c more)	11.50
Aluminum, base 18 ga. and up..	**36.40**
SEAMLESS TUBES	
High brass	21.50
Copper	22.50
RODS	
High brass, round, ⅜ to 2½-inch	15.00
Naval brass rods	17.75
WIRE	
Copper	15.00 to 15.25
High brass	17.75

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.00 to 9.50
New York	8.50 to 8.75
Chicago	8.75 to 9.00
HEAVY YELLOW BRASS	
New York	**5.50 to 6.00**
Chicago	6.75
Cleveland	6.75
ZINC	
New York	4.00 to 4.25
Cleveland	3.75 to 4.00
Chicago, dross	4.50
HEAVY COPPER AND WIRE	
Cleveland	10.00 to 10.50
New York	10.00 to 10.25
Chicago	10.50
RED BRASS TURNINGS	
New York	7.50 to 7.75
Cleveland	8.25 to 8.50
Chicago	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	5.50 to 6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	5.50 to 6.00
New York	**6.00 to 6.50**
Chicago	6.50
ALUMINUM BORINGS	
Cleveland	12.00

Strip Buying Fair

Pittsburgh, Jan. 15.—A fair amount of new buying from day to day is noted in both hot and cold rolled strip steel. Specifications on orders are coming in with a fair degree of rapidity. Makers are encouraged since these are coming from diversified lines of manufacturing activity and indicate that consumption is progressing satisfactorily. Prices are unchanged at 3.00c and 5.00c base Pittsburgh, on hot and cold strips, respectively.

Chain Prices Reduced

Pittsburgh, Jan. 15.—Prominent chain manufacturers Jan. 10 reduced their prices on proof BB and BBB coil chain $10 to $15 per ton, the ½-inch and smaller going down 75 cents per 100 pounds and the 9-16-inch and larger declining 50 cents per 100 pounds. This reduction makes the base price on 1-inch proof coil chain $6 instead of $6.50. Pittsburgh. It may however, be put temporary since the move was taken to meet the competitive figures in the going market. A heavy demand for chain of all sorts is noted in all parts of the country, distribution being particularly wide. Individual orders do not involve large tonnages but numerous small ones come from well scattered purchasers.

Prices Advance

On Sulphate of Ammonia for Export—Domestic Schedule Unchanged

New York, Jan. 15.—Export prices on sulphate of ammonia have advanced about five points within the past few days, now holding at a range of $2.70 to $2.75 port, for material in double bags. Japanese buying, while not large, is of sufficient volume to contribute materially to the better tone of the market. Domestic prices are unchanged at $2.70 to $2.75 works. Domestic buying is comprised chiefly of last minute requirements of the fertilizer industry in rounding out its annual contracts.

The situation in light oil distillates virtually is unchanged with larger sellers turning away more motor fuel inquiry than they can handle and obtaining for this product prices as high in some instances as some of the smaller sellers, who are not going into motor fuel production, get for 90 per cent benzol. While unchanged in price, a better demand prevails for xylol, and firmness therefore is particularly in the market for this product.

The market on pure benzol is 19 to 22 cents, works, in tanks and 27 cents in drums; 90 per cent benzol, 18 to 20 cents in tanks and 26 cents in drums; toluol, 23 to 24 cents in tanks, 29 cents in drums; solvent naphtha, 23 to 24 cents in tanks and 29 cents in drums; commercial xylol, 27 to 29 cents in tanks and 34 cents in drums. Phenol is holding steadily at 27 cents, works, in large lots and 30 cents in small lots. Naphthalene still is holding at 8½ cents for balls and 9½ cents for flakes.

Coke Oven By-Products

Spot*

Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.19 to 0.22
Toluol	0.23 to 0.24
Solvent naphtha	0.23 to 0.24
Commercial xylol	0.27 to 0.29
Per Pound at Producers' Plants	
Phenol	0.27
Naphthalene flake	0.08½
Naphthalene balls	0.09½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.70 to $2.75
Contract	
Pure benzol	$0.22
Toluol	0.24
Solvent naphtha	0.24
Commercial xylol	0.28
Per Pound at Producers' Plants	
Phenol	$0.27
Naphthalene flake	0.08½
Naphthalene balls	0.09½

*Spot distillates are subject to shading.

Break Records on Coast

Figures in Practically All Lines Above Those of Previous Periods—Current Business Promises Continuance of Activity

SAN FRANCISCO, Jan. 10.—Little of importance has happened during the opening weeks of the year in the iron and steel market. Present indications, however, all point to a splendid year in the steel business on the Pacific coast in 1924.

Building operations on the coast during the year just passed, have shown a substantial increase over the previous year and a continuation of this healthy growth is confidently expected. Permits issued in San Francisco for December totaled $4,952,444 and brought the total for the year up to $46,676,079, compared with $45,327,206 for 1922. The total for 1923 in Oakland was $27,540 176 an increase of $3,071,953 over 1922, which was $24,468,223. Berkeley has possibly the largest per capita building record of any city in the United States, the 1923 figures giving a total of $7,959,140, compared with $5,622,943 for 1922.

Bars, Plates and Shapes

Mill operators find little new merchant bar business but expect a decided revival in buying after inventory. While a fair volume of concrete bar business is being awarded, the majority of it is made up of lots of less than 60 tons, only 300 tons in larger awards having been made during the past week. Awards of 100 tons or over reported weekly in IRON TRADE REVIEW during 1923 on the Pacific coast totaled 44,485 tons, compared with 27,523 tons for 1922. A number of large projects are pending and it is thought most of these will be closed within the next two weeks, a total of over 7000 tons being involved.

Plate business recently has involved small lots only but some 7000 tons is pending and prices, during the past week, have strengthened. No action has been taken on 6000 tons for the Lake Young Development project at Seattle. Bids will be opened on Jan. 16 for about 600 tons for storage tanks at Mare Island. The Willamette Iron & Steel Co. are low bidders on some 30-inch pontoon and shore line pipe for the port of Portland involving 100 tons of plates. The minimum price now obtainable in this district is 2.85c c.i.f. San Francisco while 2.90c prevails. The past year in the plate market has been one of the biggest in the history of the coast. Awards of 100 tons or over reported weekly in IRON TRADE REVIEW during 1923 on the Pacific coast totaled 183,000 tons, compared with 68 000 tons during 1922. Over half of last year's total went into oil storage tanks and pipe lines. Of the total 44 000 tons was awarded to eastern fabricators, the remainder being taken by coast shops. In 1923 over 270 tanks of 80,000-barrel capacity were ordered, compared with 90 such tanks in 1922.

While action on most structural inquiries is being postponed until after inventory, numerous small lots have been awarded and over 1500 tons is included in larger awards during the past two weeks. The outlook is especially encouraging to the fabricators on the coast. A total of over 9000 tons is up for figures and the majority of this will no doubt be closed soon. Awards of 100 tons or over reported weekly in IRON TRADE REVIEW during 1923 on the Pacific coast totaled over 84,000 tons, compared with 88,000 tons in 1922. Of this about 26,000 tons were taken by the American Bridge Co. and other eastern fabricators. Prices on plain material have firmed up lately and 2.90c c.i.f. coast ports appears to be the minimum.

Other Finished Material

During the past two weeks no awards for cast iron pipe for municipal purposes have been reported although some 4000 odd tons are pending. The past year was active in the cast iron pipe market on the coast. Sales were at least 100 per cent greater than that of the preceding year. Awards of 100 tons or over reported weekly in IRON TRADE REVIEW during 1923 on the Pacific coast totaled over 73,000 tons compared with 28,000 tons in 1922.

Old Material

As bar mills are not active little melting steel is moving. Prices appear firm at $14 to $15 a ton, delivered, mills. Movement of cast iron scrap is not heavy and as a result prices have slumped several dollars, the prevailing price being $25 to $26 per net ton.

Warehouse Material

Although out-of-stock distributors have not yet compiled figures for the year it is expected a large increase in tonnage moved in 1923 over 1922 will be shown. Business during the past month fell off somewhat due to the holiday and inventory season. No changes have occurred recently in San Francisco prices but those in Los Angeles have been revised as follows: Bars from 4.15c to 4.25c, shapes from 4.25c to 4.10c, blue annealed sheets, 10 gage, from 5.20c to 5.00c, black sheets No. 28 gage from 6.50c to 6.20c, galvanized sheets No. 28 gage from 7.30c to 7.00c, bands from 5.05c to 4.90c, nails bright from 4.50c to 4.25c, and cement coated nails from 4.05c to 3.95c.

Plan To Close Out War Surplus by June 30

Washington, Jan. 15.—A New Year's resolution of national interest comes from the war department with the announcement today that beginning at once, every effort will be made to clean up the remaining war surplus property before the close of the fiscal year, June 30. The first sale of importance is to be held in Boston, Jan. 17, followed in February and March with sales at army depots in Brooklyn, Chicago, San Francisco and San Antonio. These sales will be quartermaster auctions and for the major part consist of textiles, wearing apparel and general merchandise. Sales of an entirely different character are to be held shortly when certain large real estate and manufacturing plant holdings located in the United States and Canada will be sold.

During the past year the question of disposing of the remaining surplus in two or three large block sales to the highest bidders and winding up the war department's liquidation activities at the earliest possible date, has been under consideration. This idea has been dismssed, however, as having too injurious probabilities in its effect on American industry and trade.

War department officials enthusiastically assert that the success of the department's liquidation campaign, which has sold in five years' time materials costing the government nearly $3,000,000,000 is due to newspaper and business paper advertising. With the exception of the auctioneers who have made many of the sales, advertising is the only salesman that has been employed by the government. For advertising space, booklets, engravings and art work the war department has spent approximately $1,400,000. This represents a selling cost of less than one-half of 1 per cent.

Bethlehem Steel Sells Its Mesabi Iron Interests

The Bethlehem Steel Corp., has sold to the original syndicate that organized the Mesabi Iron Co. its holdings in that company. The Midvale Steel & Ordnance Co. held a 20 per cent interest in the Mesabi company, and the Bethlehem corporation acquired this interest with its purchase of Midvale properties. While not officially announced, it is understood that Bethlehem's action is due to the fact that it did not have a controlling interest in the property and this was not consistent with its policy. The Mesabi company owns a large share of the magnetic iron ore of the eastern Mesabi range which it is mining and concentrating.

Ship More Locomotives

Washington, Jan. 15.—Shipments of locomotives from principal manufacturing plants in December totaled 329 as compared with 299 in November and 210 in December 1922. Unfilled orders at the close of last month totaled 387 as compared with 691 for the end of November and 1592 for Dec. 31, 1922.

European Tour

Is Reviewed by Dr. Moldenke Before Newark Foundrymen's Association

In an interesting address before the Newark Foundrymen's association, Newark, N. J., recently, Dr. Richard Moldenke reviewed a three-month visit he had made to England, France, Italy and Germany in the latter half of last year. Attendance at the Newark meeting was one of the best in the history of the organization, and included many foundrymen from adjacent cities.

Significance was attached to the fact that meetings were held the same evening by the New England and Philadelphia Foundrymen's associations in Boston and Philadelphia respectively. It is believed that the work now being conducted will lead to co-operative action by these three leading eastern foundrymen's organizations, in the relatively near future.

Greetings exchanged between the three associations brought forth the suggestion from the Philadelphia foundrymen that a committee be appointed by each association to hold joint meetings annually and oftener, if necessary, that closer and more concerted action might be taken.

While Dr. Moldenke spoke largely on industrial and political aspects, he interspersed his remarks with personal reminiscences and descriptions of many of the physical and historical features of the countries through which he passed. Dr. Moldenke also commented on the metallurgical progress being made.

He discussed the Ruhr situation, sketching briefly the political, economic and industrial aspects, as they affect Germany and France in particular, and the world as a whole. He said he believes that the more active interest this country is showing in the reparations problem, even though unofficially, is most timely. France, he said, has little or no iron for disposal, owing to failure to get coal from the Ruhr in sufficient quantities.

In England, Dr. Moldenke said, deflation is at an end and the country is on a sound basis financially. He believes England will be in a position to capitalize on this a little later on when deflation becomes more pronounced among other of the more powerful trading nations of the world.

While in England he saw but few molding machines in operation. At most plants, he said, the molding is still being done by hand. He said that the tendency in welding in England is toward the arc method. He saw cast iron pipe being made successfully by the centrifugal method.

Italy industrially is still in a poor position. The majority of the plants are operating around one-third of capacity. While the government appears in a stable condition, balancing her budget, etc., the purchasing power of her people is low, and this, in conjunction with the inability to get coal and iron in substantial quantities is hurting the industry materially. The enormous hydroelectric development in that country, however, has centered much attention upon the production of pig iron by electric furnaces and at present, tests are proving successful, Dr. Moldenke stated. He believes that eventually Italy may be a strong factor in the world market on high grade iron.

Announce Speakers for Structural Meeting

The annual meeting fo the American Institute of Steel Construction will be held at the William Penn hotel, Pittsburgh, Jan. 23-24. According to an announcement just issued by Charles F. Abbott, executive director of the institute, a number of prominent speakers will contribute to the program. Among those who already have accepted the invitation to address the convention are James A. Emery, legislative representative of the National Association of Manufacturers and the National Industrial council, Washington; Russell R. Whitman, president, New York *Commercial*, New York; John W. Doty, president, Foundation Co., New York; Arthur Brisbane, well-known editorial writer; E. W. McCullough, manager fabricated production department, chamber of commerce of the United States, Washington; George H. Charls, vice president and general manager, United Alloy Steel Corp., Canton, O.; John G. Jones, vice president, Alexander Hamilton institute, New York; H. J. Kenner, president, Better Business bureau, New York; Walter Drew, counsel, National Erectors' association, New York; and Fred F. Moran, managing director, apprenticeship commission of New York Building congress, New York.

Among the matters of business to be considered at the meetings will be a detailed report by Lee H. Miller, chief engineer of the institute, on the adoption of the standard specifications for structural steel. These specifications were published in full in the April 5, 1923 issue of IRON TRADE REVIEW. Charles F. Abbott will propose a program to control the future activities of the organization. The institute will hold a banquet on Wednesday evening.

Export Trade

Dull Due to Absence of Japanese Buying—Prices Are Lower

New York, Jan. 15.—Increased buying of steel by South American countries, Cuba, and some others during 1924 is indicated, but the general situation is dull at present due to absence of Japanese buying. Japanese houses bought heavily during the last quarter of 1923, and a tremendous tonnage in the aggregate has been shipped or is afloat. Prices on steel for export are somewhat lower. It is understood that the quarterly tin plate requirements of the Nippon Oil Co. of Japan just have been placed at a price equivalent to somewhere between $5.10 and $5.20 per base box, Pittsburgh.

Some mild steel bars have been sold for export at 2.25c, f.a.s. base, New York, and some high carbon bars at 2.05c, New York. Canadian mills have sold mild steel bars at $51 to $52 per gross ton, c.i.f. Japan. Nails for export are around 3.15c, f.a.s. New York. Plain wire for export is about 2.85c, New York, and galvanized wire 3.15c to 3.20c base, f.a.s. New York. Wire rods recently were sold by Canadian mills at as low at $50, c.i.f. Japan, but the American price for export is about $56 c.i.f. for Japanese buyers, equivalent to under $45, base Pittsburgh. American sheet exports are small and prices are largely nominal at around 3.60c to 3.65c, base Pittsburgh, for black, 2.75c for blue annealed and 4.55c for galvanized. Structural steel is around $58 c.i.f. Japan, or around $44 per gross ton, Pittsburgh. Black pipe for export has been quoted at 62 per cent off for 2¼ to 6-inch and 64 off the sizes smaller than 2-inch. Galvanized pipe has been quoted at 52 off for the larger sizes and 54 off for smaller than 2-inch.

Unfilled Orders Increase, First in Nine Months

For the first time since last March unfilled bookings of the United States Steel Corp., as of Dec. 31, showed an increase, totaling 4,445,339 tons. This compares with 4,368,584 tons in the preceding month, and amounts to a gain of 76,755 tons, or 1.7 per cent. Following is a comparative statement:

Date	Total	Change, tonnage	Change, per cent
Dec. 31, 1923....	4,445,339	76,755+	1.7 +
Nov. 30, 1923....	4,368,584	304,241—	6.5 —
Oct. 31, 1923....	4,672,825	362,925—	7.2 —
Sept. 30, 1923....	5,035,750	378,913—	6.99 —
Aug. 31, 1923....	5,414,663	496,100—	8.4 —
July 31, 1923....	5,910,763	475,498—	7.4 —
June 30, 1923....	6,386,261	595,090—	8.5 —
May 31, 1923....	6,981,351	307,158—	4.21 —
Apr. 30, 1923....	7,288,509	114,823—	1.5 —
Mar. 31, 1923....	7,403,332	119,343+	1.63 +
Feb. 28, 1923....	7,283,989	373,213+	5.40 +
Jan. 31, 1923....	6,910,776	165,073+	2.31 +

Tax Letters Annoy Congressmen

Pressure of Constituents Who Want Taxes Lowered Resented by the Politicians at Washington—Lay Avalanche To "Propaganda"—Good Results Are Seen, However, in Pushing Bill Ahead of the Bonus

BY FRED B. PLETCHER
Washington Correspondent, Iron Trade Review

WASHINGTON, Jan. 15.—Resentment on the part of congressmen to the flood of telegrams, petitions and memorials they are receiving from their constituents urging unqualified support of the Mellon tax reduction program in its devious progress through the political and legislative maze in congress, is difficult for the small or large income taxpayer to understand. Public pressure of late is beginning to irritate even some of the administration forces who are backing the Mellon program and the cry of "too much propaganda" is being hurled back.

Congress is becoming sensitive on the subject of letters on the tax reduction subject and is rapidly developing a bad case of "nerves" over the so-called "propaganda." To the business man, the farm organization representative and the labor union member, who in the past felt more or less free to appeal to their congressmen for desired action on problems confronting the country, without being accused of having an ax to grind, this latest fever of resentment seems curious.

If today a representative or senator gets a few letters which sound as if they may have been inspired from similar sources he calls it propaganda and charges attempt at coercion. Some congressmen are influenced by letters, but many are not. That some of the administration leaders should become sensitive on the subject of tax reduction letters has occasioned no little surprise.

Express Antagonism

Nearly 100 congressmen in the last few days have expressed antagonism toward letters seeking to influence members of both houses toward favorable action on the program of tax reduction. Their charge is that many of these letters and petitions are not spontaneous. For instance, the other day a telegram to the senate from the board of trustees of the Industrial Mutual association, of Flint, Mich., echoing the sentiment of 35,000 men and women employed in the associated factories of Flint, urging tax reduction along the lines of the Mellon plan, was regarded by many as a forced expression dictated by employers of those who had signed the petition. Again, the constant receipt of letters by congressmen causes a maximum of extra effort to make acknowlegements and replies. Apparently the safe course for a citizen to impress his congressman is to write a personal letter in his own hand and in a language that would indicate to the latter absolute independence of thought. If a constituent wishes to impress a congressman and remove all suspicion as to his sincerity, it is apparent that the letter must be phrased in words that sound as if he had prepared it from his own thoughts. Peace plans and wet and dry views that sometimes do not represent a strong vote in the districts from which letters come have helped bring about this attitude of mind on the part of the national legislators Many congressmen, if they receive a large number of similarly phrased letters, are not merely uninfluenced by them but actually are prejudiced against them.

While confidence is expressed that a tax reduction bill will be reported out of the house ways and means committee not later than Feb. 11, administration leaders and others in both houses who have been following the course of the Mellon plan through the committee realize that victory for the tax reduction forces is not yet clearly in sight. Right of way of the tax reduction bill over the soldier bonus was determined at the recent Republican caucus of the house, at which no Democratic sentiment was expressed. Public hearings were started yesterday by the house ways and means committee and in the next two weeks the framers of the tax legislation to be reported to the floor of the house will be in readiness to hear those who desire to discuss various questions of policy, including tax rates and the desirability of repealing various miscellaneous taxes, most of which would be retained in the law under the Mellon recommendations.

During February the tax bill will be passed by the house, which likely will make it possible for the senate to dispose of it in time to assure enactment into law before June, when either an adjournment or a recess will be taken for the national political conventions.

Obviously, some alterations in the bill submitted to the ways and means committee by the treasury department will be made. Congressmen who are receiving scores of individual letters and group petitions urging the support of the Mellon plan in its entirety are becoming nervous as to their ability to please constituents when the altered bill is reported out. This may account for some of the sensitiveness of congressmen concerning the letter-writing people "back home," for they know some changes inevitably will develop in the committee.

President Coolidge has been told by some members of the house ways and means committee that while some changes and adjustment may be made in the tax reduction plan when it is brought out on the floor of the house for action the fundamental principles of the plan will not be altered. Representative John Q. Tilson, of Connecticut, a member of the committee, told the President that he personally is strongly in favor of the Mellon plan "as is," but if it is necessary to make some minor alterations to get the bill out on time he will readily agree.

Bonus Sentiment Diminishing

While the sentiment for bonus legislation in this session is diminishing rapidly, the fight for adjusted compensation is by no means over. More than one-half of the Democratic membership of the house is said to be pledged to a bonus. The bonus measure can be passed in the house over the President's veto. Senator Curtis, of Kansas, Republican whip, says the bonus can be passed in the senate over the President's veto with four votes to spare but it would not be surprising that political patronage pressure can change his drift.

The chances are that the bonus advocates will not precipitate a controversy in the house at this time on the queston of priority, but will reserve their energies for the greater fight which will come when the tax bill will be reported, about Feb. 11, and the ways and means committee brings out a bonus bill for action by the house.

Secretary Mellon recently stated that some of the treasury actuaries place the low point at which the surtax rate would bring the maximum of return at 15 per cent and none of them puts it as high as 25 per cent, the figure he has recommended in the tax reduction bill he sent to congress. The statement is of considerable importance as there is a decided tendency in the ways and means committee to compromise the surtax on large incomes at 35 to 40 per cent, and the Democratic plan would run it up to 44 per cent.

Strike Threat Depresses Britain

Iron and Steel Trade Affected by Possibility of Locomotive Engineers Quitting —Canadian Pacific Places Two Liners with Scotch Builder—British Ironmaker Books Tonnage for United States

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Jan. 15.—Threats of the locomotive engineers in Great Britain to strike are having a depressing influence on the iron and steel markets. Lower pig iron prices are bringing out a larger number of inquiries. Among current sales is one of 2000 tons of foundry iron to a consumer in the United States, for shipment from Middlesbrough. Orders for tin plate are not equal to present production. Another combination of British manufacturers to fix prices has been affected, this organization including the bolt and nut makers. The Canadian Pacific railroad has ordered two 8000-ton liners from John Brown & Co,. Ltd., Scotland.

Low continental prices are dominating the export situation. The Germans have sold nails to India at £15 10s ($65.63) f.o.b. and rails at £7 ($29.64). The Belgians are selling tin plates at £8 3s ($34.51) and bars at £7 ($29.64), Antwerp. The abolition of the Saar-French customs frontier is bringing important German plans into the French export sphere.

British production of pig iron in December amounted to 627,000 tons, bringing the total for 1923 to approximately 7,437,300 tons. Steel production in December was 653,000 tons, and the total for 1923 was approximately 8,474,000 tons. British iron and steel exports in December amounted to 355,000 tons, and imports totaled 108,000 tons.

Changes in the British market in the week bring the following products to the levels as noted: Billets and sheet bars, £7 15s ($32.82); wire rods, £11 ($46.59); steel bars for home consumption, £9 15s ($41.29), for export, £9 10s ($40.23); Middlesbrough No. 3 foundry iron £4 19s ($20.96); and furnace coke £1 7s ($5.72).

Sterling exchange is figured on the basis of $4.235.

British Output Better, Makers Well Booked

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Jan. 4.—Most works have resumed full operation. In pig iron expansion of output makes slow progress. On the East Coast there was some accumulation of stocks during the holidays owing to suspension of operations at steelworks, but accumulations will be quickly absorbed and owners expect to light furnaces in nearly all districts. Staffordshire is the most backward, the district around Birmingham having only 16 active furnaces, one less than a year ago. Derbyshire, Lincolnshire, Leicester, Nottinghamshire and Northamptonshire have 55 active furnaces compared with 41 a year ago. Those districts have the advantage of adjacent ore and coal supplies, and escape heavy railway rates to which Staffordshire is subject.

In the Middlesbrough area an additional hematite furnace is to be started by Bell Brothers, an important section of the Dorman Long combine, which will bring the total up to 49 compared with 70 normally. The Barrow area still has 14 furnaces, but these have their make fully booked for two months and expectation is that other furnaces in view of greater activity at rail mills and in shipbuilding must soon be at work.

Prices are steady, No. 3 G. M. B. Middlesbrough remaining at £5 ($21.35). The expanding local demand has been counteracted by a decided shrinkage in foreign business during December, the pig iron exports being only 23,940 tons for the month. West

Sterling—$4.27

Coast iron is unchanged at £5 15s ($24.54) delivered, Sheffield and Glasgow, and £6 ($25.62) delivered, Birmingham. Demand for ferromanganese is poor. The only brand of pig iron increasing in price is East Coast hematite selling at £5 3s 6d ($22.08).

Coke problems are once more coming to the front. The fuel costs £1 17s ($7.88), delivered at the Middlesbrough furnaces, which is considered excessive. Barrow is seeking to solve its coke problem by building coke ovens to supply the 10,000 tons weekly now imported from the East Coast. The Midlands appear to be especially unfortunate in having to face a substantial increase in coke charges. A month ago Midland coke prices were fixed at £1 4s ($5.12) ovens, this figure it was then stated being stabilized until the end of March. The cokemakers booked orders on this basis over first quarter. But cautious buyers who neglected to contract forward and need fresh supplies are now asked an additional 4s ($0.85) per ton. This rise will probably prevent relighting of furnaces in this district for some time. Pig iron prices are firm.

In semifinished steel it has been found impossible to maintain £8 15s ($37.35) and £8 10s ($36.29) now is the general price. Against this large purchases have been made from Belgium at £7 5s ($30.95). There is competition also in bars, obtainable at £8 15s ($37.35) against the British figure for the same sizes of £10 15s ($45.89).

The nut and bolt trade is taking more bars. The Staffordshire maker charges £11 ($46.97) per ton, whereas No. 3 iron from Belgium can be bought at £8 15s ($37.35). In spite of the higher price the more uniform and reliable local material is largely preferred.

An order has been placed by the London Underground Railway Co. for 85,000 tons of cast iron tunnel segments for enlarging tunnels and an extension line between Charing Cross and Kesington. A recent order by the Great Western Railway Co. covers 32,000 tons of steel rails, 20,000 tons of rail chairs, 15,000 tons of wheel tires and 46,000 tons of wheel centers.

Galvanized sheets are quiet and it is possible to place orders at £18 10s ($78.99) or even lower where a contract is attractive. Sheet mills have plenty of work on hand to the end of March.

In tinplate business with the Eastern markets is opening up, orders being taken on the basis of £1 4s 3d ($5.17) per box. The new combine is gradually getting into shape, the latest development being a selling agency formed as a separate company to dispose of the output of the 230 mills controlled by the Richard Thomas and Grovesend combine. This represents about 60 per cent of the tinplate production and prices will be necessarily affected by this bulk handling of the business.

Scrap dealers have found it impossible to maintain £5 ($21.35) for

Current Iron and Steel Prices of Europe

Last Reported Prices Converted into Dollars at Rates of Exchange, January 14

British Market

Corrected to Date by Cable
Home Market Prices. Gross Tons at Works or Furnace.

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.82	7 15 0
Sheet bars	32.82	7 15 0
Wire rods	46.59	11 0 0
FINISHED STEEL		
Steel bars, England, ⅝ to 3-inch	41.29	9 15 0
Steel bars, England, ⅝ to 3-inch, for export	40.23	9 10 0
Plates, ship, bridge and tank, England	41.29	9 15 0
Plates, ship, bridge and tank, England, for export	38.12	9 0 0
Plates, ship, bridge and tank, Scotland	40.23	9 10 0
Plates, ship, bridge and tank, Scotland, for export	38.12	9 0 0
Beams, England	40.23	9 10 0
Beams, England, for export	38.12	9 0 0
Beams, Scotland	40.23	9 10 0
Beams, Scotland, for export	38.12	9 0 0
Sheets, black, 24 gage	58.23	13 15 0
Sheets, black, 24 gage, for export	56.11	13 5 0
Sheets, galvanized, 24 gage	78.35	18 10 0
Rails, 60 pounds and over	40.23	9 10 0
Rails, 60 pounds and over, for export	37.07	8 15 0
Tin plate, base box 108 pounds	4.98	1 3 6
Steel hoops	48.70	11 10 0
Steel hoops, for export	47.64	11 5 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.18	5 0 0
Hematite, West Coast, Mixed Numbers	22.76	5 7 6
Basic, Middlesbrough	20.12	4 15 0
No. 3 Foundry, Middlesbrough	20.96	4 19 0
No. 3 Foundry, Derby, Leicester, Nottingham	20.12	4 15 0
No. 3 Foundry, Northamptonshire	19.59	4 12 6
No. 3 Foundry, Staffordshire	20.12	4 15 0
No. 3 Foundry, Scotch	22.23	5 5 0
Ferromanganese, 76 to 80 per cent	72.00	17 0 0
COKE		
Yorkshire furnace	5.73	1 7 0
Yorkshire furnace, for export	8.47	2 0 0
Welsh foundry	6.88	1 12 6
Welsh foundry, for export	8.47	2 0 0

When no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Pounds per metric ton (2205 lbs.)
PIG IRON		
Hematite	24.56*	5 16 0
Foundry, No. 3	24.56	5 16 0
Stahleisen, Siegen	26.47	6 5 0
Foundry, No. 1	24.56	5 16 0
Luxemburg Foundry, No. 3		Nominal
COKE		
Lower Silesian furnace	8.77	2 1 5
Lower Silesian foundry	8.77	2 1 5
SEMIFINISHED STEEL		
Billets		Nominal
Sheet bars		Nominal
Wire rods	38.12	9 0 0
FINISHED STEEL		
Standard rails	33.88	8 0 0
Merchant bars	30.70	7 5 0
Structural shapes	36.00	8 10 0
Ship plates	33.88	8 0 0
Medium plates, 3 to 5 millimeters	38.12	9 0 0
Sheets, 1 to 3 millimeters	38.12	9 0 0
Tin plate, per box of 575 kilograms	7.80	1 16 10
Plain wire	57.17	13 10 0
Bands and strips	42.35	10 0 0

All prices are f.o.b. furnace or mill.
*German prices now are quoted in pounds, sterling.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	19.69	450
Basic bessemer, Lorraine	17.28	395
Foundry, Longwy, No. 3, sand-cast	16.84	385
Foundry, Longwy, No. 3, chill-cast	17.28	395
Ferromanganese, 76 to 80 per cent	67.81	1,550
COKE		
French furnace	6.34	145
German furnace, f.o.b. frontier*	9.63	220
German furnace, f.o.b. frontier**	10.19	233
French foundry	7.00	160
SEMIFINISHED STEEL		
Blooms	20.78	475
Billets	21.66	495
Sheet bars	22.53	515
FINISHED STEEL		
Standard rails	23.84	545
Merchant bars	25.16	575
Angles	24.28	555
Normal beams and profiles	24.28	555
Plates, ship and tank, 10 millimeters and thicker	28.00	640
Plates, bridge and tank, 5 to 10 millimeters	29.75	680
Sheets, black, 3 millimeters	31.28	715
Sheets, blue annealed, 2 millimeters	33.69	770
Shafting, cold-drawn, 40 to 60 millimeters	50.31	1,150
Bars, 2 per cent nickel steel	76.56	1,750

All prices are f.o.b. furnace or works.
*Up to 50 per cent of normal requirements.
**Over 50 per cent of normal requirements.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	16.83	415
Basic open-hearth, Belgian	17.64	435
Gray forge, Belgian	16.22	400
Foundry, No. 3, Belgian	16.22	400
Foundry, No. 3, Luxemburg	16.83	415
Foundry, No. 3, Lorraine	16.63	410
SEMIFINISHED STEEL		
Blooms	21.90	540
Billets	23.11	570
Sheet bars	23.92	590
Wire rods	33.45	825
FINISHED STEEL		
Standard rails	28.39	700
Merchant bars	27.37	675
Normal beams and profiles	25.34	625
Plates, 5 millimeters and thicker	29.60	730
Sheets, black, 3 millimeters	32.44	800
Sheets, galvanized, 1 millimeter	77.05	1,900
Plain wire	48.66	1,200
Galvanized wire	60.83	1,500
Wire nails	50.69	1,250

All prices are f.o.b. furnace or works.

heavy steel scrap delivered. The present selling figure is £4 10s ($19.21) but at least one firm is offering at £4 7s 6d ($18.68). Merchants are hoping that £4 10s ($19.21) may remain as something like the business figure on the bulk of future transactions December proved a disappointing month in regard to shipments of pig iron from Middlesbrough. The total exported was 15,659 tons. Among foreign buyers Germany headed the list taking 2085 tons. Belgium was second as a buyer of 1899 tons, and Italy followed with 1560 tons, France taking fourth place as a purchaser of 1408 tons. The United States did not purchase a ton of iron during the month from this North Eastern port, the only transatlantic parcel being one of 200 tons for Canada.

French Prices Steady on Higher Cost

European Staff Special

PARIS, Dec. 30.—The holiday season and approach of inventories have caused buying to slacken. Receipts of coke from the Ruhr continue to increase. If deliveries are maintained at the present rate France will receive 250,000 tons of Ruhr coke this month. The S. C. O. F. has just announced an intention of maintaining the present price of 220 francs ($11) for January. Despite the fact that the production of pig iron is increasing and the coke situation has become easier, it is doubtful whether there will be any marked change in the price of metallurgical products before February. Living costs in France have increased progres-

Franc—$0.05

sively with the downward movement of the franc and wage scales have had to be adjusted. Moreover coal prices have advanced an average of 10 francs ($0.50) per ton. If it were not for these factors the improvement of condition in the Ruhr would justify an immediate downward revision of French prices.

Lorraine foundry pig chill-cast, No. 3 (2.50 to 3.00 silicon) fluctuates around 400 francs ($20) per metric ton f.o.b. furnace. The Acieries de Longwy quote this quality at 395 francs ($19.75) for for 50 tons, 392 francs ($19.60) and 390 francs ($19.50) for over 200 tons. On export inquiries the furnaces quote the above prices f.o.b. Antwerp. As the ocean freight from Antwerp to North American Atlantic ports is about 50 francs ($2.50) per metric ton, French prices are not particularly attractive to American importers. Hematite pig 3.50 to 4.00 carbon is quoted at 450 francs ($22.50) by Eastern furnaces.

The sale in France of 32,000 tons of semifinished steel products seized in the Ruhr, mention of which was made in these columns recently, has not disturbed prices. French mills are heavily committed and buyers are finding it difficult to obtain delivery. Lorraine and Eastern mills are quoting basic-bessemer ingots at 450 francs ($22.50); blooms, 500 francs ($25) and billets from 520 francs ($26) to 540 francs ($27). It is of interest to note that the mills are willing to shade these prices for March and April.

Merchant bars are steady at 600 francs ($30). The Chemin de Fer de l'Etat recently opened bids for 13,127 tons of rails of three types.

Belgium Faces Lower Prices With Gloom

European Staff Special

BRUSSELS, Dec. 31.—The Belgian iron and steel industry again is confronted with keen competition owing to the general revival of production in France and Germany. For some time consumers have limited their purchases to immediate requirements. The present situation seems to justify this policy as a general downward revision in prices of iron and steel products now appears inevitable. In this respect the atmosphere of the Belgian market does not differ greatly from that of England, France and Germany. Although several attempts have been made since the war to organize these markets and establish a price policy for export, nothing tangible has been accomplished. If this condition prevails and production in Europe reaches anything like normal, a price war may be expected. The outlook is not very encouraging for Belgium as living costs and wages have increased, as well as the price of combustibles, so that production costs are moving in the opposite direction to selling prices. In fact, the price of furnace coke for December, 194 francs ($8.75) per metric ton, is a few cents higher than during November.

Mills which have taken orders for Japan are working to full capacity in order to ship their products before the expiration of the period during which certain materials for reconstruction may enter Japan duty free. Nicaise et Delcuve and La Brugeoise have taken an order for 48 third-class railway cars for the Madrid-Saragossa-Alicante railroad in Spain. English importers have passed numerous orders to Belgian mills in anticipation of possible high tariffs on iron and steel products entering England. The Forgee, Usines & Fonderies de Haine St. Pierre are reported to have obtained an order for 100 locomotives for Poland. The Belgian railways ask bids for 600 cars.

The pig iron market is weakening. Lorraine furnaces are competing keenly. Belgian interests have reduced their quotations on No. 3 foundry pig 5 francs ($0.25) to 10 francs ($0.45) per metric ton. A few transactions in basic bessemer iron have been registered at 420 francs ($18.90).

Prices of semifinished steel products are more easily maintained as practically all makers have withdrawn from the market. Blooms are quoted around 545 francs ($24.50) per metric ton; billets, 565 francs ($25.40) and sheet bars, 590 francs ($26.55).

Franc—$0.055

The weakening of prices is particularly noticeable on bars and beams. The former have sold as low as 670 francs ($30.15), the latter at 630 francs ($28.35). The market has become a buyer's market and Lorraine mills are offering attractive prices.

The plate and sheet department is hestitating and prices are being shaded. Sheets 3/16-inch gage range from 715 francs ($32.15) to 730 francs ($32.85) per metric ton.

English Foundry Absorbed

London, Dec. 31.—The centrifugal castings business of Stokes Castings Ltd., Union Foundry, Mansfield, Eng., has been transferred to the Sheepbridge Stokes Centrifugal Castings Co., Ltd., Chesterfield, associated with the Sheepsbridge Coal & Iron Co. A new plant, exclusively for the manufacture of centrifugal castings, has been built at Chesterfield. Equipment has been provided for making much larger castings than heretofore, including steel tires, small fly wheels, piston ring drums, cylinder liners, and other smaller castings. F. W. Stokes, managing director of Stokes Castings Ltd., has been appointed managing director of the new company.

Much Strength in Scrap

(*Concluded from Page* 198)

ing some grades, particularly heavy melting steel, prices of which mount with each sale. This rise bids fair to continue in that recent transactions in the valley and Pittsburgh districts commanded $22, with one instance of first grade heavy melting steel reported being placed at $22.50. Heavy melting steel here is quoted $19.50 to $20; machine shop turnings, $15.50 to $15.75; cast borings, $16.50 to $17; shovel turnings for blast furnace use, $16.25 to $16.50; hydraulic compressed sheets, $17.25 to $17.50; bundled sheets, $14 to $14.25. Other grades are up proportionately. Heavy steel in the valley is quoted $21.50 to $22 and hydraulic compressed sheets, $19 to $19.50.

All Grades Stronger

Buffalo, Jan. 15.—All grades of iron and steel scrap are stronger and sales of heavy melting steel have been made at $20 Youngstown. Dealers are paying $21 and it is doubtful if tonnage could be bought by mills now much under $22. Demand exists for most grades. A tonnage of compressed sheets, has been sold to Youngstown users. Most of the material is coming from points east.

Open-Hearth Grades Advanced

Detroit, Jan. 15.—Open-hearth grades of scrap have been advanced again, most prices being up 50 cents, while heavy melting steel, rails, and bundled sheets are advanced $1. Large consumers are taking some liberal tonnage around the current market, but buying shows falling off from 10 days ago. There is fair trade among dealers and this has tended to harden the market.

Is Strong at St. Louis

St. Louis, Jan. 14.—Sentiment among iron and steel scrap dealers continues bullish, and the market holds strong, with further advances on some items. The mills, with one exception, apparently are well supplied for the next three months. Two leading users are out of the market until April 1, and those in need of scrap are slow to buy. Some dealers have been bidding as high as $1 over what mills are willing to pay for certain grades.

Among the items on which advances were recorded may be mentioned heavy axle and tire turnings, which have been marked up to $14, iron car axles, busheling, cast grades, pipes, flues and shafting. All steel specialties are holding firm, and railroad offerings during the past month have been readily absorbed. The principal railroad list out is 70 cars by the Missouri Pacific. A small tonnage was offered by the Southern railway.

Demand is Improving

Birmingham, Ala., Jan. 14.—Iron and steel scrap is coming into better demand and dealers feel confident the market will improve as pig iron advances. There has been better demand for stove plate, No. 1 cast and other grades. Heavy melting steel is still slow and prices low. A large dealer has been delivering steel at a very moderate figure.

Charges Combine in Scrap Buying

Washington, Jan. 15.—A monopoly in the purchase of scrap iron and steel is charged in a complaint filed by the federal trade commission against concerns manufacturing iron and steel products in Pacific coast territory. The following companies are named as respondents: Pacific Coast Steel Co., San Francisco; Columbia Steel Corp., Pittsburgh, Calif.; Llewellyn Iron Works, Los Angeles; Judson Mfg. Co., San Francisco; and the Southern California Iron & Steel Co. of Los Angeles. The latter have 30 days in which to file answer to the complaint.

The respondents are said to have organized the Steel Mill Foundry & Supply Co.,, with $1,000,000 capital, the purpose of which was to do scrap buying for all six companies. The complaint states these companies are the only users of iron and steel scrap, which constitutes 80 per cent of their raw material and previous to 1920 were in competition in buying scrap. It is charged that as a result of this plan of buying the price of iron and steel scrap in California has been kept $5 to $8 below eastern levels and that various scrap dealers have been forced out of business.

Mechanical Puddler Now in Operation

Youngstown, Jan. 15.—Two mechanical puddling furnaces at the recently completed plant of the Youngstown Steel Co., North Warren, O., have started on regular production. The capacity of the two furnaces which embody the inventions of E. L. Ford, is 125 tons of wrought iron daily. The remaining two machines will be started in the near future according to R. C. Steese, president of the company. The blooming and bar mills will be started later. The plant cost more than $2,000,000 and produces a variety of products.

1923 Iron Ore Output 70,000,000 Tons

IRON ore mined in the United States in 1923, exclusive of ore that contained more than 5.5 per cent of manganese, is estimated by the department of interior, Washington, at 70,018,000 gross tons, an increase of 49 per cent as compared with that mined in 1922. The ore shipped from the mines in 1923 is estimated at 70,433,000 gross tons, valued at $244,749,000, an increase of 39 per cent in quantity and of 55 per cent in value as compared with the figures for 1922. The average value of the ore per gross ton at the mines in 1923 is estimated at $3.47; in 1922 it was $3.12. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently decreased from 10,524,279 gross or 2 per cent. The production for 1923 tons in 1922 to 10,314,000 tons in 1923, appears to be the third highest in the history of iron mining, having been exceeded only by that of 1917 and 1916.

These estimates, which are based on preliminary figures furnished by producers of about 98 per cent of the normal output of iron ore, are made by Ernest F. Burchard and Hubert W. Davis, of the geological survey. About 85 per cent of the iron ore shipped in 1923 came from the Lake Superior district, in which 59,976,000 gross tons was mined and 60,009,000 tons was shipped, increases of about 51 and 38 per cent, respectively, as compared with the quantities mined and shipped in 1922. The ore shipped in 1923 was valued at $220,710,000, an increase of about 52 per cent. These totals exclude ores that contained more than 5.5 per cent manganese. The stocks of iron ore in this district apparently increased from 9,059,947 gross tons in 1922 to about 9,285,000 tons in 1923, or 2 per cent. The average value of the ore at the mines in the Lake Superior district in 1923 per gross to was $3.68; in 1922 it was $3.33.

The southeastern states, which constitute the second largest iron ore producing area, including the Birmingham and Chattanooga districts, mined 7,533,000 gross tons of iron ore in 1923, an increase of 36 per cent as compared with 1922. The shipments of ore from these states to blast furnaces in 1923 amounted to 7,716,000 gross tons, valued at $16,778,000, an increase in quantity of 38 per cent and in value of 73 per cent as compared with the quantity and value of shipments in the previous year. The average value of the ore produced in these states in 1923 per gross ton was $2.17; in 1922 it was $1.74.

The northeastern states, which include the Adirondack district, New York, and the Cornwall district, Pennsylvania, in 1923 mined 1,823,000 gross tons of iron ore and shipped 2,029,000 gross tons, an increase of 39 per cent in the quantity mined and of 90 per cent in the quantity shipped in 1922. The average value of the ore in these states in 1923 per gross ton was $2.82; in 1922 it was $2.33.

It is estimated that the western states mined 677,000 gross tons of iron ore and shipped 679,000 gross tons, valued at $1,536,000 in 1923, an increase of 38 per cent in the quantity mined and of 91 per cent in the value of the ore shipped, as compared with 1922.

Imports of iron ore for the 11 months ending Nov. 30, 1923, amounted to 2,611,240 gross tons, valued at $10,459,948, or $4.01 a ton. The imports for the year 1922 were 1,135,156 gross tons, valued at $4,916,294, or $4.33 a ton. The exports of iron ore for the 11 months ending Nov. 30, 1923, amounted to 1,116,600 gross tons, valued at $5,304,645, or $4.75 a ton, as compared with exports for the entire year 1922 of 602,194 gross tons, valued at $2,770,878, or $4.60 a ton.

American Iron Ore Production Records Compared

	Ore mined (gross tons)		Ore shipped			
			1922		1923	
	1922	1923	Gross tons	Value	Gross tons	Value
Michigan	10,453,578	14,312,000	12,457,856	$43,449,513	14,219,000	$55,128,000
Minnesota	28,768,960	44,498,000	30,209,372	98,903,398	44,611,000	161,995,000
Wisconsin	577,024	1,166,000	794,673	2,455,660	1,179,000	3,587,000
	39,799,562	59,976,000	43,461,901	144,808,571	60,009,000	220,710,000
Southeastern states						
Alabama	5,234,568	6,837,000	5,294,520	8,791,069	6,968,000	14,451,000
Georgia	24,149	133,000	28,566	77,636	133,000	310,000
Missouri	58,408	59,000	58,320	244,928	60,000	292,000
North Carolina	17,279	60,000	19,279	49,415	60,000	152,000
Tennessee	156,464	293,000	159,473	418,578	293,000	879,000
Virginia	30,971	151,000	30,359	120,685	202,000	694,000
	5,521,839	7,533,000	5,590,517	9,702,311	7,716,000	16,778,000
Northeastern states						
Massachusetts	.....	.....	4,368	21,840	.....	.....
New Jersey	90,359	309,000	90,374	400,356	350,000	1,435,000
New York	444,381	547,000	191,195	1,049,050	708,000	3,131,000
Pennsylvania	780,836	976,000	782,916	1,022,756	971,000	1,159,000
	1,315,576	1,832,000	1,068,853	2,494,002	2,029,000	5,725,000
Western states	491,550	677,000	491,349	804,402	679,000	1,536,000
Grand total	47,128,527	70,018,000	50,612,620	157,809,286	70,433,000	244,749,000

Figures compiled by geological survey. Those for 1923 subject to revision.

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Trade Association Case Muddled

EXCHANGE of correspondence between Attorney General Daugherty and Secretary of Commerce Hoover on the proper limits of the collection and dissemination of statistics by trade associations has not contributed to clear the air in this unsettled but important question as had been hoped. On the contrary the informal opinion given by the Attorney General in the correspondence now made public as it has been interpreted leaves legitimate activities of trade associations more obscure than ever. In a word, the Attorney General disagrees with Secretary Hoover that data which relates to past or closed transactions may be exchanged by those engaged in the same line of business without violation of the anti-trust law; and also that the making public of such statistics legalizes the exchanges. The Attorney General goes further and says that trade information such as production, shipments, stocks and prices should be distributed strictly through a responsible medium like the department of commerce. He adds: "I see no objection to its being gathered by an association provided it be strictly guarded and the association be prohibited from distributing it among its membership."

While the Attorney General's communication contains some sweeping statements such as the latter which taken strictly by themselves might seriously demoralize the whole trade association movement, it is necessary to consider his entire utterance in order to grasp the true significance of his words. The Attorney General apparently does not mean to say that the mere collection and dissemination of statistics by an association is illegal but his language and reasoning are grievously confusing. General information of this character covering an industry or branch of industry infringes upon the public right, he seemingly holds, when it reveals the exact condition of one competitor to another as to prices, sales, etc., setting up the desire to imitate the most successful and where it is pursuant to a positive or tacit understanding which the mere publicity of the figures does not nullify. Apparently, and this seems sound law and equity, it is the purpose to which the statistics are put, not the mere act of collection or distribution, that determines the question of legality or illegality.

Any other version of the Attorney General's meaning is inconceivable. To prohibit groups of those engaged in the same line of business from tabulating and chronicalling their collective experience for purposes of guidance and knowledge is to deny them the use of intelligent methods of conduct for their affairs and to neutralize the efforts of these co-operative agencies which have contributed greatly to the advancement and stabilization of American industry. Any practical man knows that the government has not the facilities and cannot hope to substitute a statistical and informative service for that now supplied by specialized private groups. Secretary Hoover's great support and appreciation of sane and enlightened business methods are well known. It is to be hoped that out of his liberal, common sense policies, he will find a way to bring greater understanding and clarity to the present muddled situation than the department of justice out of a fine adherence to the complexities of the law seems able or disposed to do.

Prosperous Roads Intrench

IN THE long run anything taking away the reward that should be the sequel to earnest effort is certain to stunt initiative and prove self-frustrating. Such doubtless will be the ultimate outcome of the recapture clause of the Cummins-Esch act, which the United States Supreme Court has declared constitutional. Under this clause, a railroad earning more than 6 per cent must turn over to the interstate commerce commission one half of the excess for the benefit of the weaker roads in that region.

But for the present it is not probable that all of the baneful results predicted will materialize. The more likely upshot is to be increased expenditures for equipment and maintenance, more or less concealed by skillful bookkeeping. In fact, some makers of railroad equipment already are foreseeing heavier purchasing and are planning accordingly. Nor will this expected spurt in betterments by the prosperous carriers redound immediately to the detriment of the weaker roads, because the latter

never have received any recaptured earnings from the commission.

The present level of railroad rates, both freight and passenger, has been gaged by the commission to net the carriers 5½ per cent upon their tentative valuation. In 1923 the average return for Class I carriers was slightly over 4 per cent. It is an open secret that some systems earned much more. Annual reports do not disclose this readily and it would be a difficult task to present convincing proof. But there is no doubt that many carriers have plowed back into their properties earnings liable to forfeiture in case the recapture clause were upheld. Now that the clause has been held legal, the incentive to preserve earnings will be even greater.

The railroads cannot be blamed. To take a case analogous in its general aspects, suppose the Steel corporation were compelled to divide its earnings in excess of a stated percentage with its less-fortunate competitors. Would not the officials of the corporation be dullards indeed if they did not put back into their plants as much of this excess as possible, rather than permit it to go to make competitors more formidable? Just so are some of the railroads fortifying themselves with earnings accruing to them through the commerce commission's present level of rates. It is good business, not sharp practice.

The intent of the framers of the Cummins-Esch act was to provide rates that would be fair to shippers, give the weaker roads a chance against their entrenched rivals, and provide a means of depriving the better carriers of unduly large earnings. But for the present this aim is reversed. The better carriers are improving their plant and making it the more difficult for the less prosperous to compete. If left to run its natural course, the practice of the railroads will exhaust bookkeeping ingenuity and dull incentive. More likely, the act will have been changed before then, and meanwhile increased railroad purchasing is in prospect.

New Hope Rising for Europe

OUT of the thick fog and lowering clouds of European confusion and black despair, a faint beacon light of hope is appearing. It is shining about the committee of experts appointed by the reparations commission to consider the resources and the capacity of Germany, looking to the eventual solution of the reparations problem.

The work of this committee is possessed of supreme significance for two reasons. One is that it represents the first time since the war that the politicians of Europe have been willing to place the task of solving postwar economic complexities where they belong—into the hands of financial and economic experts. The other fact lending deep significance to the work of the committee is the presence of Americans in an unofficial capacity. This is the first occasion, since the transatlantic trip of Mr. Wilson, that Americans have taken an active and leading part in major European counsels, officially or unofficially.

The task of the committee is staggering. It is all the more so, because of Europe's present situation. Germany is sinking rapidly deeper into the hungry quicksands of financial ruin. France is reeling under a crushing weight of public debt, totaling 400,000,000,000 francs, based upon extravagant reparations expectations. Great Britain is struggling stoically, but none the less desperately, with the problems of shattered continental markets and unemployment, which are gnawing at her vitals. The measure of Europe's extremity is found in the currently demoralized exchange rates.

All this gives emphasis and weight to the opening statement of the chairman of the committee of experts the American, Brig. Gen. Charles G. Dawes, that "great disaster faces each ally and Europe, unless common sense is crowned king." With his renowned vigor and directness of expression General Dawes denounced the "foul and carrion loving vultures, the nationalistic demogogs of all countries—who would exploit their pitiful personalities out of a common misfortune." He pleaded for a unity of plan for solving the peace problem, just as unity of command under General Foch was necessary to win the war.

The American members of the committee bring to the gigantic task first of all financial and economic understanding and ability. But of equal importance is the fact that they bring a sense of fairness and justice, a desire to get at the heart of the trouble and devise a remedy making for the welfare of, not one nation but of all nations, and a complete indifference of the personal political consequences of their recommendations and acts.

The committee begins work with its functions restricted by the mandate of France. However, the body of economic physicians summoned to the bedside of sick Europe probably will not be content to examine superficial symptoms. Undoubtedly they will probe deep and offer their opinion as to the proper remedy necessary to bring about the complete recuperation of the patient. The first basic need, as pointed out by General Dawes, is to help Germany to her financial feet Until this is done it is folly to talk about reparations, that is "common sense." The committee has begun its work under auspicious circumstances. It may well prove to be the entering wedge which will finally open the door to a solution of the great problems underlying the world's present ills, those of reparations and interallied debts.

Trade Statistics Put In Doubt

Attorney General Proposes Government Take Over Work of Collecting Statistics—Declares Gathering and Distribution of Trade Facts Is Illegal in Light of Cement and Tile Case Decisions

WASHINGTON, Jan. 15.—That the gathering of trade facts for various industries by trade associations, in co-operation with the department of commerce and other government agencies, should be confined to a responsible government department exclusively is proposed in an opinion sent to Secretary of Commerce Hoover by Attorney General Daugherty. This is an aftermath of the recent dissolution decrees of the federal courts, which held that the Tile Manufacturers' Credit association and the Cement Manufacturers' Protective association were collecting trade facts in violation of the Sherman anti-trust act.

The position of the attorney general may cause the ultimate dissolution of many trade associations throughout the country. It was made known in reply to a letter to Attorney General Daugherty from Secretary Hoover on Dec. 11, in which the secretary sought to learn the effect of the federal court decrees. Attorney General Daugherty's finding is interpreted as justifying the fear expressed by Secretary Hoover, and to uphold literally the limitations of trade association work in the tile and cement cases. It would be no surprise here if trade associations throughout the country would disband in large numbers, fearing prosecution. In this case, co-operation by the associations with the department of commerce and other governmental agencies in gathering statistics for various industries, might be completely abandoned.

In declaring that the conditions in an industry, production figures, shipments, stocks on hand and the average price or range of prices should be distributed strictly through a responsible government medium "like your department," Attorney General Daugherty adds that he can see no objection to information being gathered by an association provided it be strictly guarded and that body be prohibited from distributing it among its membership.

"This is the same view that I entertained when the communications were exchanged in February, 1922," said Mr. Daugherty, "and it since has been strongly confirmed by decisions of the Supreme Court and by investigations of a number of associations and the trial of cases involving associations."

Mr. Daugherty's views in a number of respects were opposed to Mr. Hoover's. The attorney general, in his latest opinion, would not only limit distribution of the information suggested to a "responsible medium like your department," but disagrees with the secretary of commerce concerning the giving out of information on closed transactions among members through the associations.

"Those who organize and conduct these associations appear to entertain the idea," says Mr. Daugherty, "that if the information imparted relates only to past and closed transactions there can be no violation of the antitrust act. In my judgment such an idea is wholly fallacious. One's future conduct is to be judged by what he has done and is then doing, and not so much by what he says he will do. It is one's actual conduct that is taken as an example for imitation. It has developed in the trial of cases involving associations that the members first agreed upon prices; but such a plan did not work because the members could not be relied upon to keep the agreement; and the system of exchanging statistics was adopted because it was found to be the only effective way to procure co-operation as to prices and production; and such co-operation could be thus procured even in the absence of any positive agreement.

"Again, the idea seems to be prevalent that no exchange of information between the members, regardless of its character, can be unlawful if at the same time publicity be given thereto through the press or some governmental agency. In my judgment this idea is likewise fallacious. The illegality as well as the evil results arise from the co-operation among the members pursuant to a positive or tacit understanding; and this co-operation is not affected by publicty. Those who purchase the commodity, though fully informed as to the activities of the association, can protect themselves only by an organization and co-operation of like character, which if it were lawful, is an impossibility upon the part of the public."

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Form Selling Company

London, Jan. 1.—A new company which will be named either the British Tinplate Corp. or the South Wales Tinplate Corp., has been organized to sell the tin plate and sheet output of Richard Thomas & Co., Ltd. and the Grovesend Steel & Tinplate Co., Ltd., which were recently amalgamated and now control nearly half of the British production of tin plate, with an output of approximately 9,000,000 boxes per year. The new selling organization represents an amalgamation of a number of Welsh merchant firms in the tin plate trade, including S. J. Burrell Prior, Ltd.; W. J. Firth; Kennedy Berry & Co., Ltd.; Cyril W. Massey & Co., Ltd.; McLean Conner & Co., Ltd., Phillips & Hill; F. S. Candelin & Co.; the Colonial Agency, Ltd.; and Wedekin & Co. The new company will be registered with a capital of £1,000,000. W. J. Firth will be the first chairman. The company will probably have offices associated with Richard Thomas & Co., at Bush House, Aldwych, London.

The Business Trend

January 17, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

THE domestic outlook has been decidedly strengthened by recent events. Most important of these have been the gain in unfilled orders, the better prospects for the Mellon bill in congress and the rise of credit resources.

Abroad the situation is badly mixed. French and British exchanges continue extremely weak, just as the expert commission to examine Germany's fiscal condition starts its work. The presence of able American financiers upon this committee gives promise that it may offer the world some solution of the reparation problem.

Sterling is down partly because liquid capital is fleeing to America, against the expected rise of labor to full power. The expressions of Ramsey MacDonald have been reassuringly moderate, yet a capital levy is part of labor's program.

Francs at Low Ebb

Francs have plunged to the lowest level in all history. The French government blames speculators. The most probable cause, however, lies in the appalling French debt of 400,000,000,000 francs. Part of this debt was erected on the uncertain hope of huge reparations.

In this country financial power is reaching collossal proportions. It was reflected last week in the rise of the ratio of cash to note and deposit liabilities of the federal reserve system to 78.4 per cent against 73.8 per cent one week before. Earning assets fell $245,000,000. Interest rates declined.

Some easing of the money market is always customary at this season. But this year the movement was wholly unprecedented. The federal reserve banks now have $1,632,000,000 in excess of the minimum cash reserves required. This compares with an excess of $1,555,000,000 one year ago.

Gold Imports Heavy

The reserve system's earning assets appear to be falling to a level which will yield an income inadequate for the system's expenses of $35,000,000 annually. This may force the purchase of securities. The present credit situation is due to the continued heavy gold imports amounting to $30,000,000 to $40,000,000 monthly.

These gold imports have increased bank resources and made it unnecessary for member banks to seek aid from the federal reserve system. Gold is being put into circulation through gold certificates. The sum circulated in 1923 was $200,000,000.

The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures...	564	414	438	550	...
Cash Ratio Fed. Res. System, %.	78.4	73.8	75.3	73.6	...
Loan Rate, 4-6 mo. N. Y. per cent.	4¾-5	4¾-5	5	4½-4¾	5
Aver. 25 industrial shares	$111.20	$110.64	$108.98	$110.35	$58.19
Average 25 railroad shares	$59.97	$58.98	$58.24	$61.71	$82.90
Average 40 bonds.	$78.22	$77.15	$76.60	$76.79	$93.00
Car loadings (week ended Dec. 29..	615,461	877,257	835,296	704,308	*612,741
Bank Debits, 246 cities (000 omitted)	$10,519,620	$10,699,799	$9,339,000	$10,269,317	.....

*1920.

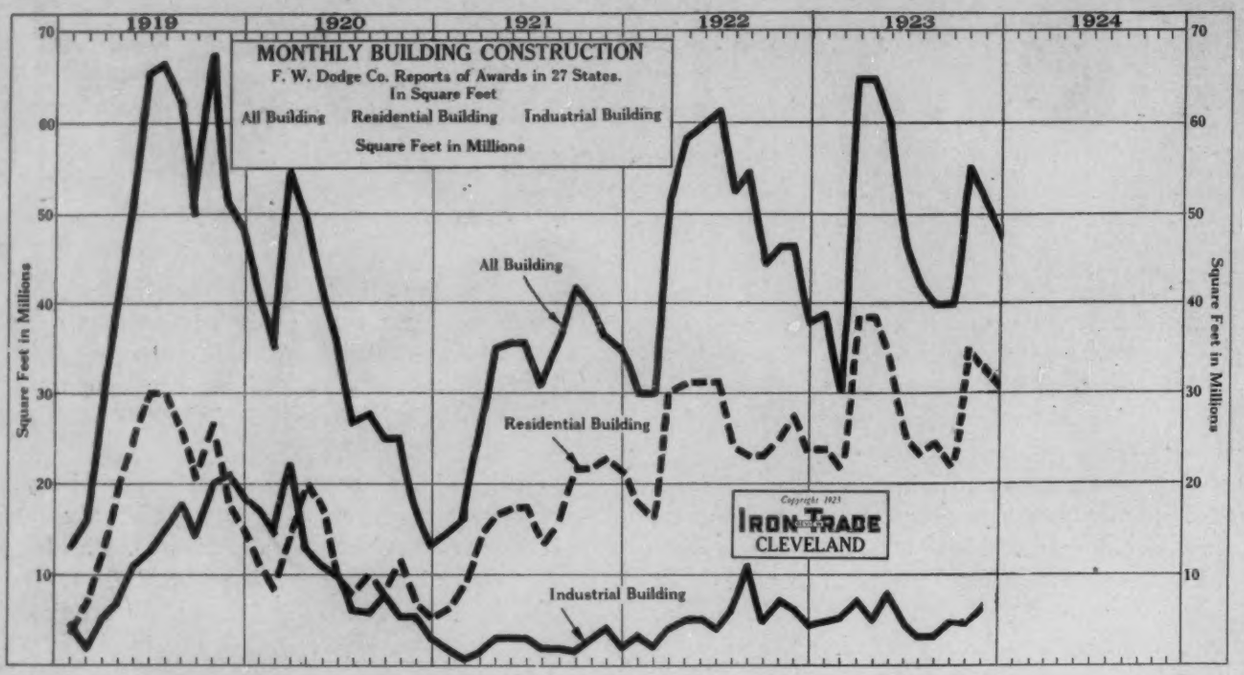
FOREIGN EXCHANGE (Demand)

	Normal	Last week (Close)	Week before	Month ago	Yr. ago
Sterling	$4.86	$4.28	$4.29	$4.37	$4.67
Francs	19.3c	4.83c	4.90c	5.29c	6.86c
Lira	19.3c	4.32c	4.37c	4.35c	4.92c

MONTHLY COMPARISON

	November	Month before	Year ago	Monthly average 1913
Dodge building Awards in 36 states	$318,828	$360,687,000	$265,000,000	$82,126,000
Business failures: Number	1704	1673	1737	1336
Liabilities	$50,291,708	$79,301,741	$40,265,927	$22,732,000
Exports	$404,000,000	$402,000,000	$380,056,000	$207,000,000
Excess of gold imports	$39,011,000	$28,550,000	$17,400,000	†630,716
Bureau of Labor Price Index....	152	153	156	100
Bradstreet's Price Index	145.4	141.6	149.1	100
Economist's British Price Index	4541	4320	4283	2717
Cost of Living Index	165	164.1	158.4	100
New incorporations	$909,693,800	$700,708,300	$843,652,900	$172,301,000
Railroad net earnings ...	*$102,746,000	$92,200,000	$85,205,000	$59,301,000

†Monthly average excess exports. *October.

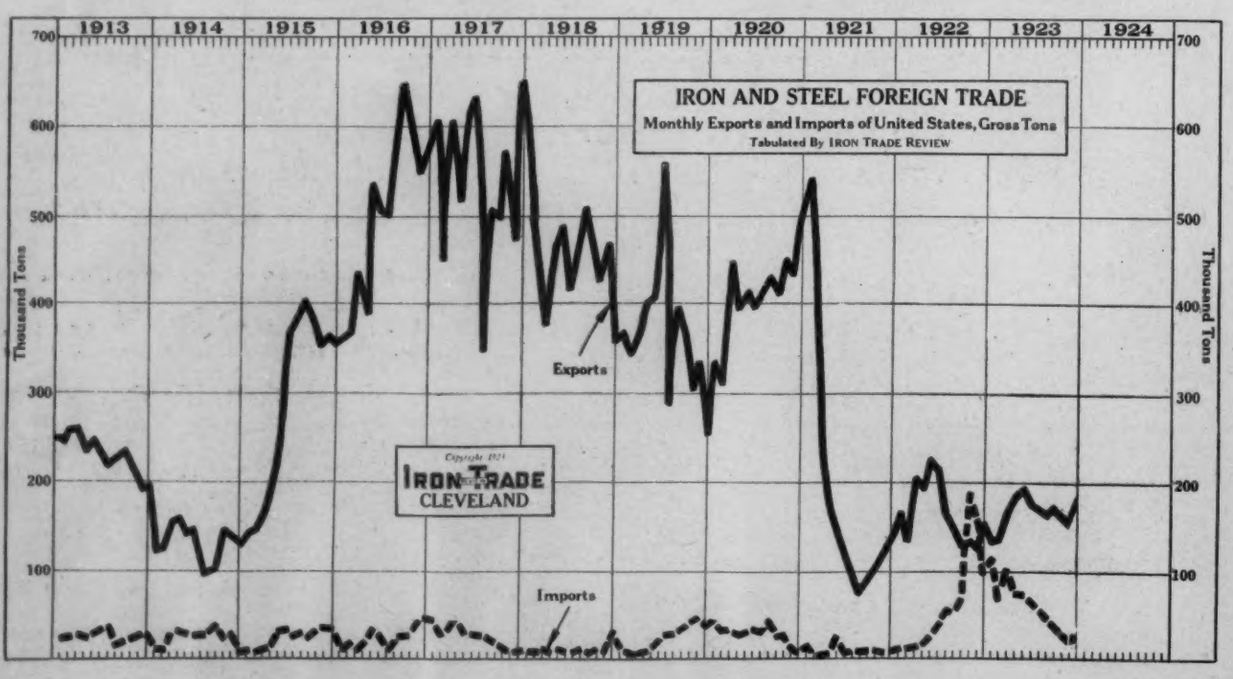


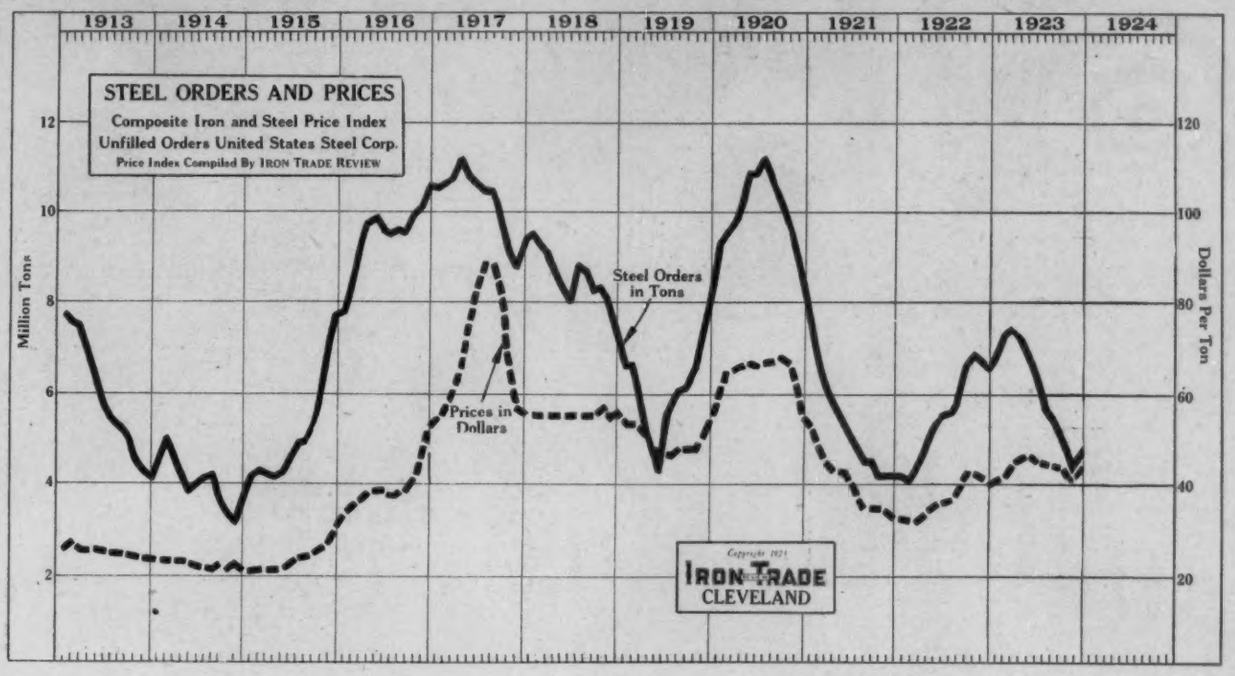
Building Construction

DECEMBER brought much less than the usual seasonal decline in construction awards. The total of 48,096,300 square feet in 27 northeastern states reported by the F. W. Dodge Corp. was slightly under November, but it was 23 per cent above December 1922. It was the largest December for any year in history except 1919. The grand total of building for all of 1923 was 597,796,000 square feet, the largest on record. Large residential building accounted for the increase. Industrial expansion was moderate.

Steel Foreign Trade

AUTUMN brought recovery in the export market for steel products. The total foreign shipments in November amounted to 189,142 tons against 154,887 tons in October and 129,647 tons in November 1922. Imports continued their steady decline, reflecting reduced industrial activity and ample supplies of steel for domestic use. The November imports amounted to 26,294 tons the smallest since June 1922. The total compared with 29,556 tons in October and 141,249 tons in November 1922.



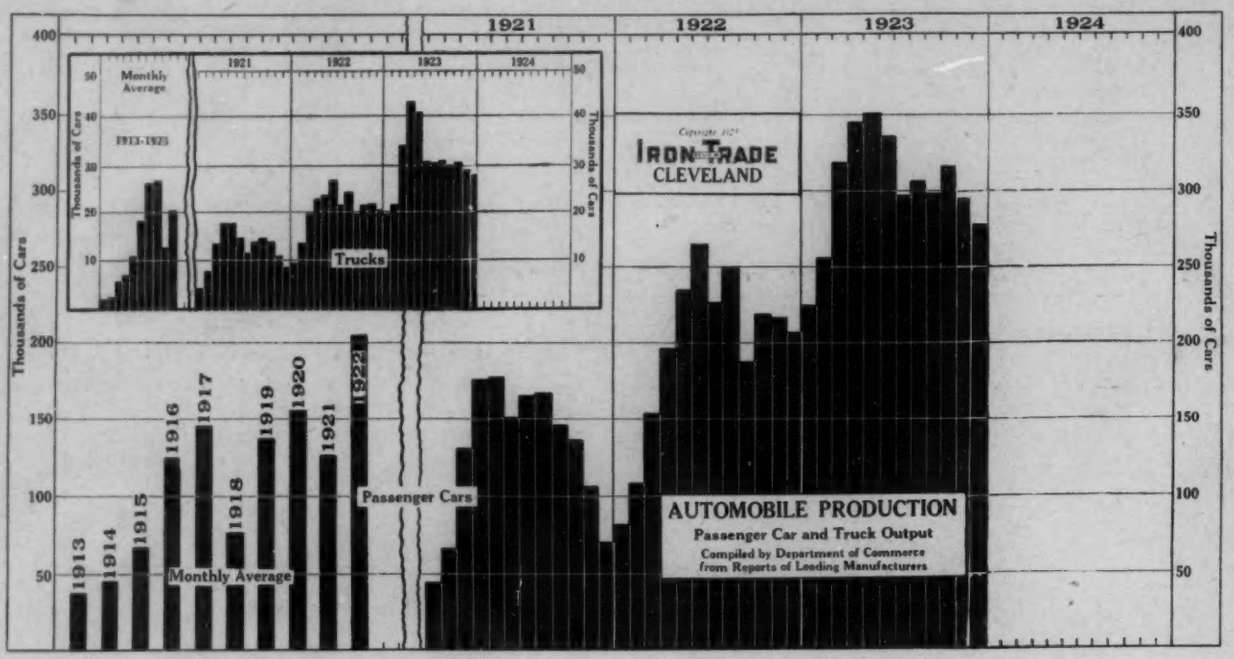


Steel Orders and Prices

UNFILLED orders of the United States Steel Corp. on Dec. 31 stood at 4,445,339 tons, a gain of 76,755 tons over November and the first increase since March. Bookings reached their peak in March. The subsequent decline continued uninterruptedly through November. The total dropped to within 5 per cent of the low point for orders at the bottom of the depression of 1921. The composite price index, shown in the chart, advanced slightly in December.

Monthly Ingot Output

DECEMBER ingot production with a daily average of 113,750 tons was the smallest since September 1922. It was 27 per cent below the peak month for 1923 of 157,776 daily average in April. Final figures for the year's ingot output show a total of approximately 43,226,955 tons. This is less than 1 per cent below the high record of 1917. The decline in December partly is accounted for by the letdown in operations incident to the holiday period.

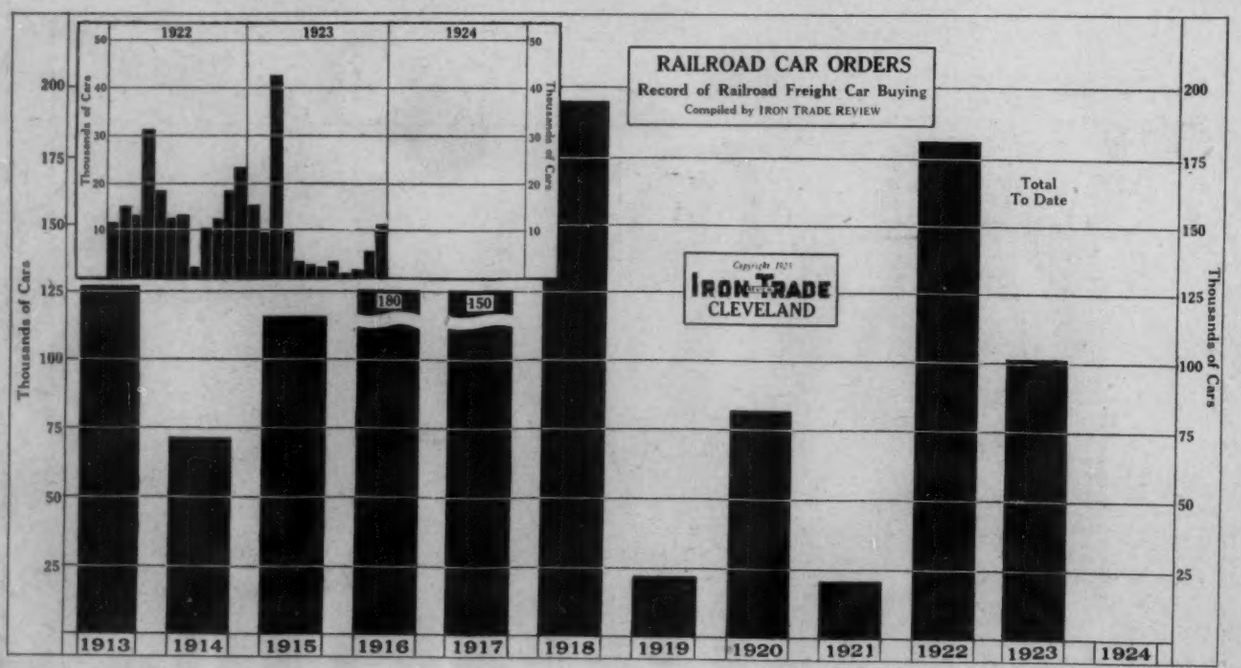


Automobile Production

THE output of passenger cars and trucks in December was approximately 300,000, a slight decline from November. This made a grand total for the year of 4,014,000 cars or 50 per cent over 1923. The number of passenger cars made was 3,644,000 an increase of 51 per cent and the number of trucks made was 370,000, or an increase of 46 per cent. An output of 5,000,000 cars in 1924 is now scheduled. Total automobile registration in the United States is now 14,500,000, one for every seven persons.

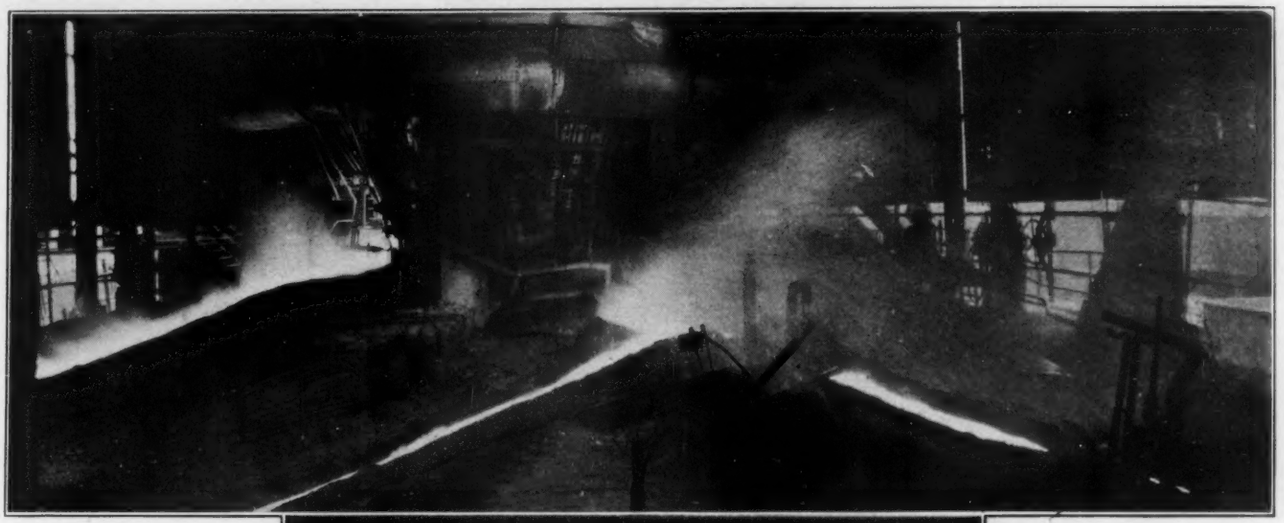
Car Awards

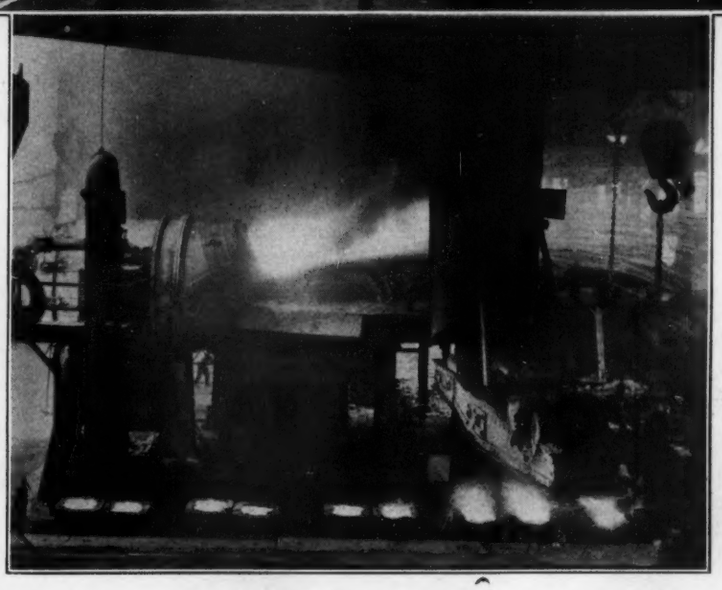
INCREASED railroad buying is reflected in the rise of car awards in December to 10,600. This total was the largest since last March. It brought the aggregate of car orders in 1923 to 101,000 cars, a decline of 44 per cent from 1922. Last year the railroads expended $1,075,897,000 for improvements. Of this $690,857,266 went for equipment. It is planned to spend a sum in 1924 equal to that of last year. Of authorizations for outlays made in 1923 the sum of $300,806,000 was carried over into 1924.



Industrial Photography Applied to Iron and Steel

BY JOHN D. KNOX





PHOTOGRAPHY perhaps outstrips any other agency for making an impression on the mind, which accounts for the figurative assertion frequently heard that the photograph is the only universal language. An American would encounter difficulty in explaining verbally the details of a machine to a foreigner not versed in the English language, but if a photograph of the machine is exhibited he will get some idea of what is depicted. The scope of photography often is overlooked. Its more extensive uses are found in the motion picture industry, for illustrating trade publications, newspapers and magazines, and for other commercial purposes.

In former years it was customary for salesmen to display their various lines of merchandise, which necessitated the transportation of one or more large trunks. On account of railroad rates having been increased, however, this method has been discarded to a large extent and photographs of the merchandise are used instead. The article to be sold is photographed on a color plate or film and the resultant print colored so as to portray to the prospective buyer the appearance of the merchandise. Photography often is employed where exactness is desired.

STRIKING examples of iron and steel photography. The view above, showing molten slag flushed from the cinder notch of the blast furnace at the left, while the metal is tapped from the iron notch at the right, was snapped in 1/100 *part of a second. Below is a bessemer converter, ejecting millions of red and white sparks, and flames of violet, orange and blue.*

The author is associate technical editor at Pittsburgh of IRON TRADE REVIEW.

Master dies, accurate to 1/1000-inch, are made by the use of special machinery from a photograph of the object.

During the last decade photography has taken a prominent part in the iron and steel industry by reason of the fact that illustrations are used as a medium to convey to buyers the character of rolling mill machinery and machine tools. The prints frequently are mounted on cloth to withstand constant handling and to provide a suitable means for binding. Considerable data of special importance to the steel industry have been made available in recent years by photomicrographs. Mechanical and thermal treatment of steel produces various changes of structure which are revealed when the surface is inspected by the microscope. The camera finds wide application in photographing the magnified surfaces. A micrograph reveals the temperature at which the steel was hardened or drawn; the depth of carbon penetration; the impurities that may be present; whether the steel has been hot or cold rolled, pressed hydraulically or forged; and whether segregation of the elements has taken place.

In a large number of steel works little importance is attached to photographic work. Some employe usually is detailed to make photographs, using the same camera and lens for all classes of work. Industrial photography, particularly as

applied to iron and steel plants, however, has a wider application than generally realized, and those engaged in this class of the work not only should be schooled in the art but should have qualifications of a diversified character. For example, it is advantageous for a steelwork's industrial photographer to know the details of operation from the ore to the finished product; to have a knowledge of electricity because of the various lamps, rheostats, and other electrical appliances used in the studio and encountered in the various departments of the works; and to have a complete knowledge of photographic chemistry in order to compound the various chemical mixtures used in photographic work.

Conditions Not Always Ideal

A marked difference exists between commercial and industrial photography. The industrial photographer in taking interior views at steel plants is confronted with adverse rather than ideal conditions. He encounters steam, intense heat, smoke fumes, dust, grease, poor light conditions and vibration, which are detrimental to the production of clear prints. He must not interfere with the workmen. A photograph wherein life and action are depicted frequently is of more value than one in which the inanimate object merely is shown. In view of the diversified character of work, the industrial photographer must have a complete knowledge of all branches of photography.

Perhaps at no other steel plant in the United States is industrial photography considered more seriously than at the plant of the Youngstown Sheet & Tube Co., Youngstown, O., where a studio devoted solely to the art has been maintained for the last 14 years. Negatives on file and indexed total in excess of 10,000 and cover numerous plant operations, and items of an advertising, engineering, safety and medical character. This department is under the direct supervision of W. A. Bartz who is a member of the Photographers Association of America and was one of the organizers of the commercial section of that society.

Mr. Bartz entered the employment of the Youngstown company in 1905 as clerk in the main office. When the company installed its photographic department five years later Mr. Bartz was placed in charge. At that time a room on the top floor of a small brick office building was set apart as a dark room. A few chemicals and a camera constituted the entire equipment. The department has became one of the best equipped industrial studios in this country.

Technical information dealing with industral photography was difficult to

W. A. BARTZ

obtain, and Mr. Bartz was compelled to work out his own theories. He was successful in overcoming what appeared to be insurmountable obstacles and now is recognized by colleagues of his profession as an authority. Many photographs exhibited by him at national conventions have won blue ribbons. One of his achievements has been the perfection of a special lighting apparatus which operates automatically with the shutter of a camera. The device makes possible, with an exposure of 1/50 to 1/100 part of a second, the production of a photograph of objects from which sparks are ejected while molten metal is being cast.

Halation, such as produced by glossy portions of machinery or by the flame or light issuing from open-hearth furnaces, the mouth of a bessemer converter and heating furnaces, usually is intensified on the negative, which results in a print having blurs or blank white spots. The brilliancy of the flame makes the photographing of a bessemer converter for detail of the vessel and the surrounding equipment decidedly difficult. Mr. Bartz has developed a method whereby it is possible to produce, without any semblance of halation, a photograph of a bessemer converter in the blowing position showing the innumerable sparks issuing from its mouth, together with the detail of the charging platform, pouring floor, etc.

Housed on the fourth floor in one wing of the main works administration building at East Youngstown, O., the photographic department of the Youngstown Sheet & Tube Co. has been laid out and equipped with as much care as any other department of the company. The studio, 20 x 38 feet and well lighted, is flanked along one side with a wide-top bench, extending the entire length of the room, and it is fitted with spacious cupboards for the storage of supplies. No expense has been spared in securing the best equipment. The latter comprises over 30 lenses of various types and focal lengths. Cameras include one of the studio type which takes a photograph 14 x 17 inches, and copying, high-speed, motion picture and other cameras of various sizes. There is an air compressor for air brush work. Separate apparatus is used for making lantern slides by the direct-color process, and for making enlargements up to 6 feet long. Special lighting devices also are a feature of the studio.

Work Rooms Are Isolated

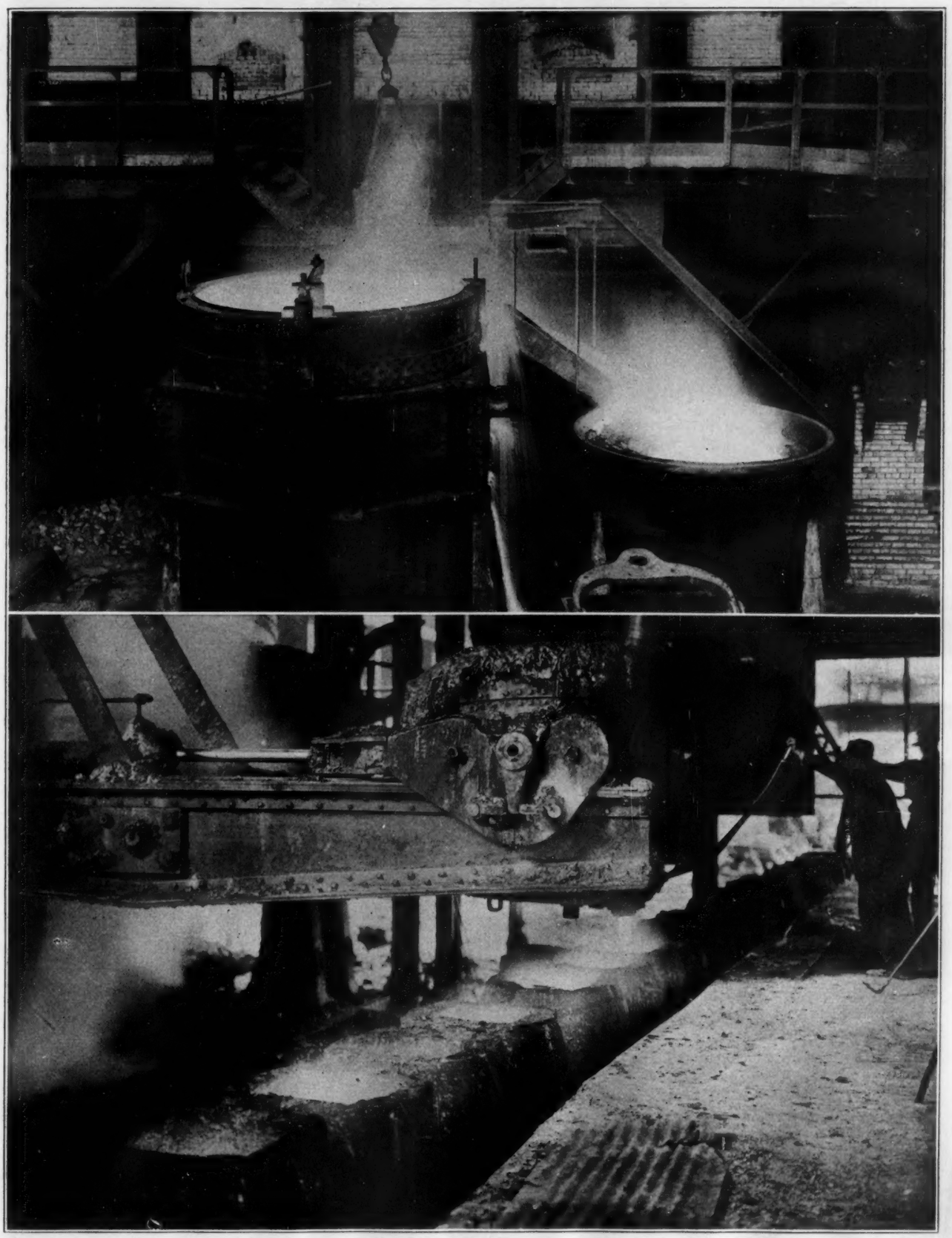
Separate dark rooms, 12 x 18 feet, adjoin the studio. Each is equipped with a 30-inch ventilator to exhaust all chemical fumes and to avoid excessive room temperatures. The dark rooms are of ample size to permit ease in working and are equipped with red lights, lights for printing, sinks lined with sheet lead, and a water distilling apparatus. Access to the dark rooms is had from the studio through a passageway about 4 feet long, which is provided with a door at each end. This construction affords entrance to the work rooms without the intrusion of light.

The temperature in the dark rooms is a matter of considerable importance for if the developing solution is too warm negatives of a heavy, flat appearance will be produced. If the developing

Vulcan's Cameraman

A COMMERCIAL photographer in an Ohio town went out one day with a trade journal representative to obtain pictures of a new mill. The photographer was bored with the assignment; he complained that he could see no opportunity for "art." After snapping a few views in disinterested fashion he pleaded to get away. "I have an appointment to make a REAL picture," he said. "This is no place for me." On the way back the photographer got out of the automobile in front of a little home where a funeral was in progress. "Here is where I get a GOOD picture," he explained. He was to photograph a dead man!

That photographer was NOT W. A. Bartz, of the Youngstown Sheet & Tube Co., "Vulcan's cameraman." The incident is narrated merely to show the difference in point of view of what is practical and artistic; how difficult it is for some men to see art in industry, and how realistic the art may be made, with practical value in proportion to its realism.



IN TAPPING AN OPEN-HEARTH FURNACE A BIG LADLE IS PLACED BENEATH A SPOUT AND A CROWBAR IS JAMMED THROUGH A CLAY-PLUGGED HOLE, RELEASING THE FIERY LIQUID, AS SHOWN ABOVE. SLAG RISING TO THE TOP LIKE OIL ON WATER IS DIRECTED INTO A THIMBLE SHAPED POT AT ONE SIDE. BELOW IS THE MOLTEN STREAM FLOWING INTO THE INGOT MOLD

THE INTERIOR OF SHEET MILL IS DIFFICULT TO PHOTOGRAPH BECAUSE OF SMOKY ATMOSPHERE, YET HERE IS SHOWN CLEARLY THE HOT MILL CREWS ROUGHING DOWN THE BARS, ROLLING THE SHEETS, OPENING AND MATCHING THE PACKS

solution is too cool it will result in the production of negatives having the appearance of being overexposed. Consequently the temperature in the developing room is not permitted to rise above 70 degrees nor fall below 65 degrees Fahr. The intelligent manipulation of the developing solution requires experience and some knowledge of chemistry.

Lantern slides showing the various steps in the manufacture of iron and steel by the company are made to illustrate a lecture for schools, colleges and universities. This is one form of educational publicity.

In making lantern slides the negative is held vertically in a frame at the rear of which a bank of electric lights is encased and covered with ordinary tracing cloth. The camera then is focused on the negative, the penetration of the light producing brilliancy, sharpness and detail. The exposed plate, 3¼ x 4 inches, is developed and finally hand colored.

Future plans include the taking of motion pictures of mill operations for display at conventions, colleges, universities and public meetings. A number of reels have been made of activities at the company's annual field meet and other events, for exhibition to employes. Once a month the company issues a bulletin for the benefit of its employes. This has a circulation in excess of 15,000 copies. The photographic department is called upon to take photographs of workmen associated with the various departments. From these, halftones are produced and are accompanied by biographical sketches or other matter of interest to many employes.

Each year the company distributes a calendar, on each page of which is presented in two colors a view of a plant or departmental operation. The photographs are prepared in the company's studio. For halftone reproduction the company aims to produce photographs which necessitate a minimum amount of retouching.

That photographs reveal conditions which may lead to accidents, and remind other workmen of negligence, is borne out by the company's experience. In

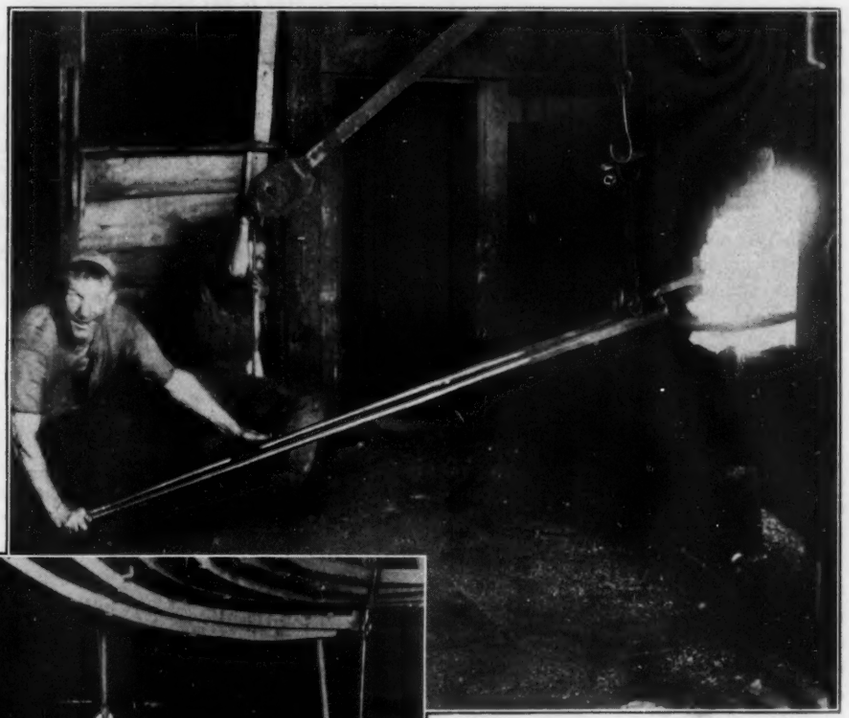
LADLES HOLDING 50 TO 60 TONS OF LIQUID IRON ARE LIFTED BY CRANE 45 FEET OR MORE FROM THE FLOOR LEVEL AND THEIR CONTENTS POURED INTO A CYLINDER-SHAPED VESSEL WITH A HOLDING CAPACITY OF 1300 TONS. THE PURPOSE OF THE MIXER IS TO CORRECT ANY VARIATION IN THE COMPOSITION OF THE METAL

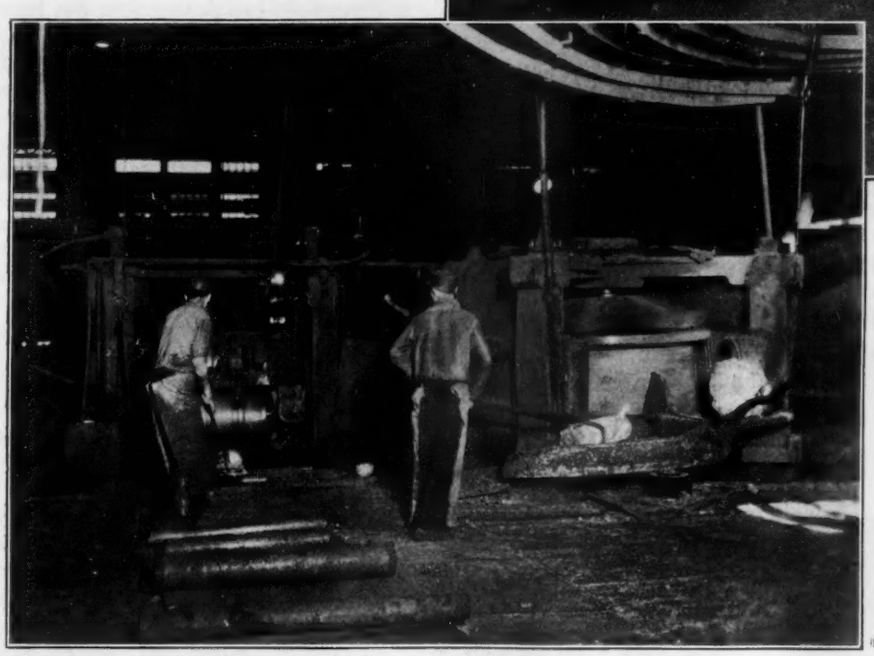
many instances photographs of injuries are posted on the various safety bulletin boards throughout the plant. This procedure has had a decided effect in reducing the number of accidents.

Whenever a question arises as to some particular mill arrangement, a photograph is taken for the executives. Photographs also are made to illustrate the application of the various products manufactured by the company. Arrangements recently were made with an electric concern to wire two houses, one with the wires exposed and the other with the wires installed in steel armored cable conduit of the type produced by the company. Photographs were taken as both installations progressed for the purpose of comparing costs and for pointing out the advantages of enclosed wiring. Whenever new construction is undertaken by the company the officials keep in touch with the progress by means of photographs.

Usefulness of the photographic department further is portrayed in the case of weight cards. These cards are used extensively in the shipping department of the pipe mills. Formerly they were typewritten but because of their becoming soiled after a few days of severe handling they now are photographed with the result that the copies continue in service much longer. In preparing a photographic print the weights first are typewritten on an ordinary piece of copy paper, but an impression is made on the reverse side of the page by a carbon paper. The copy then is placed in a horizontal position on a piece of glass beneath which is installed a bank of electric lamps, and is photographed, the camera being supported in a vertical position from above.

The applications of photography at steel plants are so diversified that it is impossible to list them completely. New uses are being developed. That the importance of photography is gaining recognation in the iron and steel industry is reflected by the increase in the number of photographic departments, which are maintained by iron and steel producers in this country at present, compared with the number operated a decade ago.





WITH shirt sleeves rolled to the elbow, displaying brawny muscles, the puddler removes a pasty ball of iron from the furnace and transfers it to the rotary squeezer. In the photograph below, the ball of puddled iron at the right is ready to be fed into the squeezer, which welds its particles of iron into a comparatively solid mass and at the same time expels slag and cinder. After passing through the squeezer the puddled iron is ejected in the form of a cylindrical bloom. A shingled bloom is being fed into the puddling rolls, as shown at the left.

Ford Expected To Build Textile Mill

The Ford Motor Co. is expected soon to build, or control the building of, textile machinery of new design. What plans are ahead in this line is a matter of conjecture at the present time, but New England manufacturers are particularly interested because of the large amount of textile machinery which is made in the district and also because the future of textile industry is threatened in New England by the excessive labor costs. The main objective in the new Ford cotton mill is the elimination of labor costs.

So far the work has been largely of an experimental nature. Briefly the Ford Motor Co. has commissioned Lockwood, Greene & Co. to lay out in a building known as the Aviation building, Detroit, the first unit of a mill which will make the cloth that is used as the backing for the artificial leather for both seats and tops in Ford cars. The completed mills will contain roughly 7000 spindles and approximately 200 looms.

The process will be made as nearly continuous and automatic as possible. The raw cotton will go first to a bale breaker, next through two vertical openers set in tandem, and then directly to the cards. Each machine will be fed automatically from the preceding machine. The cards will deliver the stock directly to the back of the draw frames and these in turn will deliver to the slubbers. Other processes such as warping, slashing and weaving will follow on automatic machines.

Casting High Speed Steel Tools

Methods and Theories by Two Firms Manufacturing High Speed Steel Tools Cast to Approximate Size and Shape Are Presented and Discussed— How Properties of Tools Can Be Controlled

BY J. M. QUINN

SEVERAL companies, other than the one with which the writer was identified, have been more or less successful in casting high speed steel tools. It is interesting to know what two of these companies thought of this process and how their metal was produced. As some of the statements made by these companies relative to this subject are contrary to what the writer believes, some notations in *Italic* type are offered which bring out certain points. It is hoped these statements will bring forth some discussion.

The summary of the method employed at the one plant relates particularly to high speed steel alloys, as distinguished from the ordinary alloys of steel, which are determined largely by their content of carbon. All such high speed steel, when poured, show a characteristic form of microstructure of the dendritic type or pattern[1], with the narrow fern-like or tree-like crystals (dendritic) of carbide surrounding or separating the crystals of the softer eutectic matrix. The sharply defined carbide structure stands out in coarse plate-like crystals, and must be broken down[2] and put into solution or diffused in the matrix to properly transform the steel into a final hardened martensite state, suitable for use as cutting tools.

1—*All high speed steels as cast* have approximately the same cellular structure or carbide envelopes and no one would attempt using the steel as a tool while in this condition. This is indicated by the micrograph, Fig.* 1. *If the casting temperature is too great a highly dendritic structure will result. This structure which is naturally weak cannot afterwards be obliterated either by heat treatment or even by mechanical working of the steel. The exact chemical formulas of these carbides are unknown but probably are mixed complex tungstides and carbides of iron, chromium and vanadium.*

2—*This is true. The high speed ingot is first annealed primarily to assist in modifying the cellular structure and to remove internal strains. The effect of hammering and reduction breaks up the coarse structure, refining and distributing the carbide and tungstide particles throughout the mass of the steel, as Fig.* 2 *indicates.*

Unless the carbides are thoroughly dissolved and transfused, such a steel would chip out and disintegrate, due to the localized and interspersed plates of carbide. It, therefore, has been necessary in such steel to reduce the structural forms of the castings by physical distortion, and heat treatments. Such treatments[3] like forging, rolling and hammering with intermediate steps of annealing, break down and lay the crystalline formation so that the final bars of metal have a more or less fibrous silky texture.

3—*The chief source of trouble with ordinary high speed steel when making large milling cutters, hobs, etc., * which cannot receive as much work as say a lathe twist drill, is invariably found to be due to the presence of laminated carbide lines. These carbide lines which are forged out and elongated segregates formed from the melt, are most difficult to eliminate when once formed.*

Even in this form articles made from the metal must be given heat treatments or tempering to bring them up to the proper degree of hardness, to serve as cutting tools. The structure is one which entirely lacks true crystalline formation of uniform character, as any such structure is dependent upon the breaking and distortion of the actual crystalline forms of the alloy. As is well known the separation of the carbides and other crystalline forms in such a cooled alloy is termed ingotism.

It is one of the objects of the present process to produce a high speed steel, having in mind the dissolution[4] of the highly refractory elements, such as carbides which are formed during the fusion of the metals. It also is the object to secure a more perfect admixture to produce a steel which when poured requires no physical treatment such as forging, etc. to place its crystalline forms into the desirable martensite[5] form of structure; in fact, no treatment other than such final heat treatments or tempering as is given finished cutters or tools.

4—*A perfect solution of the carbides in this steel has not yet been attained even by the cast method* as indicated by Figs.* 3 *to* 6. *However a beiter structure and mixture of the alloys is usually obtained with the cast method than with many high speed steels made by other processes.*

5—*The martensitic structure is only obtained by heat treatment and is desired by all high speed steel tool makers.*

In the making of high speed steels it has been customary to employ a substantially pure iron or steel base having a definite carbon content. The production of this steel, therefore, has been attended with high cost and many failures due to inherent impurities[6] and contaminating elements both in the iron base and in the alloying elements introduced. A high speed steel scrap can be used and a resultant analysis secured with a higher content of carbon, silicon and manganese, than is shown in the ordinary high speed steel[7] made under the most favorable conditions with material of purity.

6—*This statement is contradictory as a substantially pure iron or steel base would not contain contaminating elements. The amount of impurities in ferroalloys is within reasonable control and is usually only a matter of purchasing alloys of an analysis which will meet requirements.*

7—*A charge of all high speed steel scrap can also be used for the usual high speed steel process and the carbon, silicon and manganese contents readily increased beyond the usual specification, if so desired.*

Advantage is taken of the peculiar characteristics of certain of the elements, by introducing in the total content definite increments, and in conjunction with other of the alloying materials. Thereby producing complex or compound carbides in a form which is really an alloy of the carbides, and a compatible correlation with alloys of the true metallic elements thus securing the desired end.

The author formerly was superintendent of electric furnaces, U. S. High Speed Steel & Tool Corp., Troy, N. Y.

**Bulletin No.* 7, Detroit Twist Drill Co., Detroit.

**The Manufacture and Working of High Speed Steel*, by Andrew and Green.

**The Properties of High Speed Steel*, by G. J. Horwitz. This paper was presented before the New York section of the American Steel Treaters' society, June 20, 1919, and includes the micrographs shown in Figs. 3 to 6.

It has been found that desired results can be secured even with considerable variation in the content of tungsten, carbon, vanadium, manganese and chromium in the production of this high speed steel, and that the contents of these elements may be further varied by using molybdenum, zirconium or uranium. For example an alloy having the following analysis has the desired properites for this high speed steel:

Carbon	0.70
Manganese	0.50
Vanadium	0.75
Chromium	4.00
Tungsten	18.50

Variations in the content of tungsten, vanadium, manganese or chromium or the introduction of other elements have of course, a distinct influence, although the final structure of this steel bears the same general characteristics.

It has been almost impossible heretofore to make a sound casting from tungsten steel. Such steels have a fine crystalline structure, but tungsten has been used sparingly, usually not in excess of 3.00 per cent tungsten, with a resultant steel difficult to work and temper. The percentage of tungsten has in some cases been increased in ordinary high speed steel, but in this process it is possible to carry it up to 19.50 or 20.00 per cent[8], still securing the characteristic fine crystalline structure. This large content of tungsten can be used because of the control of the carbon content and using vanadium and chromium in the presence of titanium with suitable fluxes. Vanadium[9] is employed to counterbalance the tendency of chromium to oxidize and form slag. Further loss of chromium into the slag is prevented by introducing manganese which serves its purpose as a deoxidizing medium at the same time forming a direct alloy. It also serves its purpose in unifying the crystalline formation when the metal is slowly cooled down.

8—*Tungsten has less influence on the structure than carbon. *However, the action of tungsten in the absence of chromium, is to raise the temperature at which tempering or annealing begins, while in the presence of chromium, it increases the secondary hardness which is brought about by low heat treatment. Chromium increases the solubility of the tungsten carbides to such an extent that with 6 per cent of the former element, 19 per cent tungsten can be held in solution at 2460 degrees Fahr.*

9—*It is exceedingly expensive to use a $5.00-a-pound alloy like ferrovanadium to retard the oxidation of a $0.50-alloy like ferrochrome, and with such poor furnace practice much of both alloys would be oxidized and lost. Having a good reducing slag is preferable and only a small percentage of the chromium is lost when added under this condition. This last remark also applies to the ferromanganese addition.*

A normal excess of carbon[10] is provided during the melting of the scrap and alloys, and this element is built up with the intention of producing certain carbides of chromium, vanadium, tungsten and manganese. These commodities, during the alloying of the metals, go into solution and combine for the purpose of producing what might be termed a carbide alloy, which will have a eutectic point comparable with the eutectic of the alloyed elements. Thus segregation, or ingotism, which has been such a serious obstacle in ordinary high speed steel, is avoided.

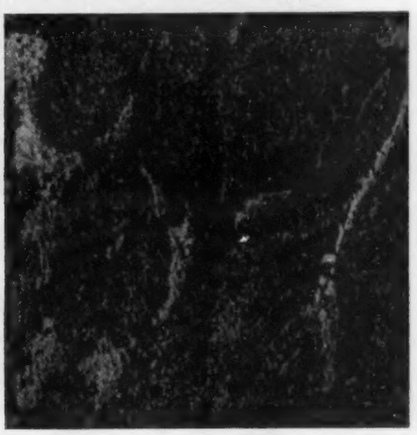


FIG. 1—MICROGRAPH OF A HIGH SPEED STEEL INGOT "AS CAST," SHOWING THE COARSE CELLULAR STRUCTURE. FIG. 2—ANNEALING AND FORGING REFINES THE METAL

10—*This statement about a normal excess of carbon is misleading as an excess of carbon under good furnace conditions would bring the final carbon above the desired percentage. Should this excess carbon be necessary to help deoxidize the melt it would indicate poor furnace conditions, or oxides in the charge. But the final carbon in cast high speed steel is intentionally made higher than in regular high speed steel for rolling.*

With the foregoing preliminary explanation in mind, the following will give an illustration under the most trying conditions, that is, using approximately 200 pounds of high speed steel scrap, with 100 pounds of iron, showing an analysis quite different, and a further content of 250 pounds of iron, and illustrates the building up of the carbon, silicon and manganese contents[11]. With foregoing the following elements are alloyed: Approximately 110 pounds of 80 per cent tungsten having an analysis of 1.00 per cent carbon and 0.60 per cent silicon; 14 pounds of 40 per cent vanadium having an analysis of 0.50 per cent carbon and 0.50 per cent silicon; 42 pounds of 60 per cent chromium having an analysis of 0.60 per cent carbon and 0.50 per cent silicon. With these materials, a silicon-aluminum-manganese flux is used which in the aggregate brings the carbon, silicon and manganese contents approximately up to 3.9 pounds carbon, 2.4 pounds silicon, and 4.7 pounds of manganese. In order to increase the carbon content, carbon is added to bring the working carbon content up to approximately 5.7 pounds of carbon. With these contents in mind, the final analysis of the alloy with its carbon content considerably less than 1.00 per cent indicates the activity of the carbon in the formation of carbides and in graphite dissolution.

11—*Note the accompanying table where these scrap and alloy additions are listed. It seems reasonable to believe that large percentages of vanadium, chromium, and probably other alloys, are oxidized and lost when the slag is removed. Otherwise it would not be necessary to duplicate these additions later in the operation to secure the desired final analysis.*

The furnace is charged with the iron and tungsten to which preferably is added a small content of molybdenum, or approximately 1 pound, then deoxidizing the mixture by raising the temperature above the normal fusion point of the combined alloy of iron, tungsten and molybdenum. When the metal is melted a content of vanadium is added equal to approximately 4 pounds. When the steel is deoxidized further addition is made of approximately 42 pounds of chromium in the

**The Properties of High Speed Steel*, by G. H. Horwitz.

presence of ferrotitanium. An immediate reaction occurs with a rise of temperature which is increased beyond the normal rise resulting from adding the titanium. Of course, it is understood that the initial charge of iron, tungsten and molybdenum is covered with a suitable slag-making material of lime, etc. After the ferrotitanium has been introduced the metal is slagged off[13], and a new content of lime, etc., added.

12—*After all these metallic deoxidizers had been added a good slag should be obtained provided reasonable skill and care had been taken with the operation. Now if such conditions were attained, there does not seem to be any reason for removing a good slag and exposing a readily oxidized metal to the atmosphere at a time when it should be well deoxidized.*

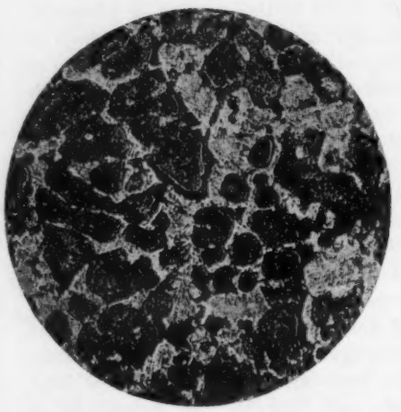
After the mixture with its chromium and titanium has been thoroughly mixed, a content of manganese is added in the presence of silicon and aluminum. This thoroughly cleanses or scavenges the steel, the silicon reducing the basic materials or impurities, while the manganese in part combines and in part finds its way to the slag. The aluminum in the combination acting almost as a thermite producing great liquidity, and through its deoxidizing action, permits an immediate and perfect union of the various metals of the alloy. After the mixture is completely cleared of reaction a content of approximately 10 pounds of vanadium is added in the presence of a further content of titanium. This produces a quick deoxidization and purification, and the titanium materially aids the absorption of the vanadium in the steel. There is, of course, a sharp rise of temperature following this introduction, and as soon as this subsides, a further reaction is given to the now alloyed materials by introducing what might be termed a thermite purifier, consisting of silicon of calcium, manganese, silicon and aluminum[13]. The metal after remaining at a high heat for a short period is slagged off and poured.

13—*Using large quantities of metallic deoxidizers will cause excessive shrinkage in the final cast tool or ingot, and the steel will not be a good product.*

It may be noted that the full content of vanadium is introduced in two stages, immediately after the tungsten has been alloyed, and again in conjunction with titanium. The titanium also is introduced in two stages, notably with the chromium and with the last addition of vanadium. This aids in the production of the various composite carbides as well as in the absorption of the chromium, vanadium and tungsten. Little or no titanium shows in the final analysis of the steel. It may also be noted that a working content of carbon is built up in the furnace as the various elements are introduced, all of which contain varying contents of carbon. To insure the maximum carbon content, pure carbon is added to such an extent as may bring the content up to approximately 5.7 to 5.9 pounds of carbon. It also will be obvious that the normal manganese content of the metal is increased by introducing manganese in the presence of silicon and aluminum, thus taking advantage of its solvent and deoxidizing attributes, its ability to form carbide, and its peculiar ability to aid in the alloying of tungsten and other metals pos-

Effect of Heat Treatment on Tool Steel

Fig. 3.—Left—Annealed at 1500 degrees Fahr. and air cooled, showing a coarse, cellular structure Fig. 4.—Right—Annealed at 1350 degrees Fahr. and furnace cooled. The structure is finer that that of Fig. 3, but still cellular.



The accompanying micrographs show samples of high speed tool steel subjected to different heat treatments. The metal contained 0.93 per cent carbon, 5.07 per cent chromium, 1.50 per cent vanadium, and 21.02 per cent tungsten. All samples were etched with nitric acid and ortho-nitro-phenol—Magnified 500 dia.

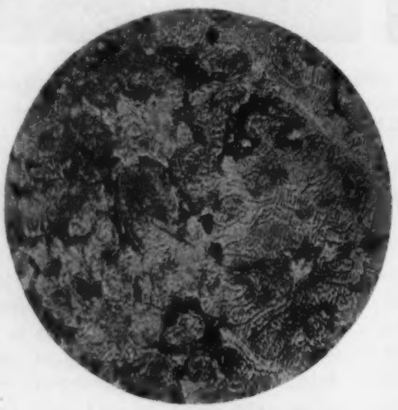
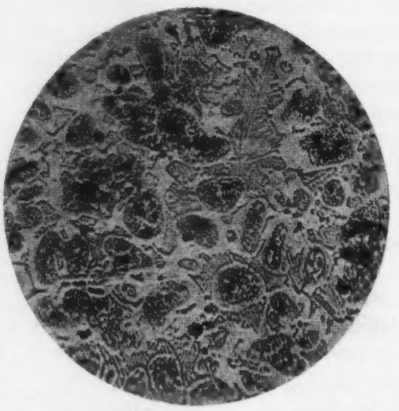


Fig. 5.—Left—Annealed at 1800 degrees Fahr. and furnace cooled. The structure is sorbitic and contains double carbides Fig. 6.—Right—Annealed at 1350 degrees Fahr. and furnace cooled, then quenched in oil from 2300 degrees Fahr.—The structure is martensitic (dark) and austenitic (white) with unabsorbed double carbide eutectic.



sessing comparatively high melting points.

This steel made as described has unusual characteristics. It may be poured and cast from the furnace and will fill the molds perfectly even to intricate patterns of cutting tools, and only requires grinding and heat treatment or tempering to provide the highest grade cutting tools. The microstructure[14] is of the martensite form.

14—*Final structure of the steel depends to a great extent upon heat treatment given the steel. All high speed steel has a martensitic structure when heat treated properly and the carbides substantially in solution.*

The procedure followed by another manufacture relates to the production of castings especially for milling cutters, reamers, countersinks, bar stock for lathe tools, mills, etc., which will be tough, homogeneous, free from blow holes, gases and other impurities to such an extent as to be adapted for use after finishing and heat treatment, without the necessity of rolling, forging or hammering. By this process it is possible to produce a wide range of alloy steels in the form of castings at a great saving in cost as well as improvement in quality, especially in semi and regular high speed steels, as compared with the best forged, rolled or hammered steels now on the market.

The ordinary scavenging treatment with silicon, manganese, etc., for removing impurities in the electric furnace just before pouring is ineffective[15]. This is evidenced by the weakness and lack of uniformity of the castings due to blow holes, slag, carbon, other impurities, and crystallization due to rapid solidification found in cast steel tools ordinarily produced. Also there is variation of analysis in different parts of the same casting and loss of expensive alloying metals used. Thus for vanadium, ordinarily a loss of 50 per cent[16]. and upward occurs, whereas by this process the loss can be between 20 to 30 per cent which effects a decided saving in this expensive material. Again, the percentage of usable castings from a melt is important because alloy steel is expensive at best and a high percentage of loss increases the cost of the remainder. Furthermore these figures are affected by the amount of metal lost from a usable casting in the head or risers, so that it is desirable to reduce this loss as much as possible.

15—*Ordinary methods of deoxidation have not the desired effect and unusual treatment is necessary before high speed steel should be poured into tool form castings.*

16—*Any manufacture of high speed steel loosing 50 per cent or more of the vanadium added had better change their furnace practice. In the electric furnace, the loss of vanadium should be less than 10 per cent of the amount added, provided it is given a fair chance to alloy with the metal.*

By this process, day to day results in a commercial foundry producing form tools such as milling cutters, etc., in sand molds, show over 90 per cent usable castings, with 30 per cent or less for heads as compared with ordinary steel foundry practice using a head equal to or greater than the casting, and having a much lower percentage of good castings. In many castings risers are done away with entirely. This process enables these results to be obtained by producing a tough, dense and homogeneous steel when set and of extreme fluidity when poured. The tools may be cast within 0.015-inch of surfaces, enabling finishing to be done by grinding with a large saving in the labor cost. They also can be heat treated according to usual practice.

The melt[17] is made up of iron, tungsten and chromium in any desired manner so as to secure complete alloying. These materials are melted, and the temperature is raised much higher than the melting point. The high temperature is continued for 30 minutes or more. A quantity of scavenging deoxidizing mixture contains some or all of the silicon, titanium, vanadium, manganese, aluminum, etc. as desired. Alloying metals such as cobalt, zirconium, molybdenum[18], uranium, etc., which otherwise would be volatilized or oxidized and lost can now be added. The vanadium used at this time is for scavenging and not for alloying as alloying vanadium is added later so as not to be oxidized.

In the ordinary practice the melt would now be kept in the furnace for a short time and then cast in an ingot mold, but could not produce satisfactory or uniform cast tools. Cast ingot steel of suitable analysis then is hammered, or rolled, and annealed, and finally machined into tools at considerable expense. For cast form tools or bar cutting stock additional refinement is necessary to eliminate oxides, gases and other impurities.

17—*The original charge of scrap and alloys should be so low in sulphur and phosphorus that these elements should not be considered at any time during the process as entering the reactions except to a small degree. However, other oxides like iron*

Charge and Additions for Cast High Speed Steel

Commodities	Pounds added	Carbon Per cent	Carbon Lbs.	Manganese Per cent	Manganese Lbs.	Silicon Per cent	Silicon Lbs.	Vanadium Per cent	Vanadium Lbs.	Chromium Per cent	Chromium Lbs.	Tungsten Per cent	Tungsten Lbs.
Charge of iron and scrap													
High speed steel scrap	200	0.70	1.4	0.50	1.0	0.30	0.6	0.24	0.5	4.00	8.0	18.50	37.0
Iron or steel scrap	100	0.50	0.5	0.45	0.4	0.09	0.1	...	...	...	...	...	...
Iron scrap	250	0.12	0.3	0.34	0.9	0.04	0.1	...	...	...	...	...	...
Alloy addition with iron and scrap													
Ferrotungsten	137	1.00	1.4	...	...	0.60	0.8	...	...	...	...	80.00	109.6
Ferrovanadium	14	0.50	0.1	...	...	0.50	0.1	40.00	5.6	...	...	...	...
Ferrochromium	42	0.60	0.2	...	...	0.50	0.2	...	...	60.00	25.2	...	...
Silicon, aluminum, manganese flux	1	...	..	...	...	50.00	0.5	...	...	...	...	...	...
	3	...	...	80.00	2.4	...	...	...	...	...	...	...	...
First preliminary total	747	0.52	3.9	0.62	4.7	0.31	2.4	0.82	6.1	4.32	33.2	19.63	146.6
Carbon additions	2	90.00	1.8	...	...	...	...	...	...	...	...	...	...
Second preliminary total		0.76	5.7										
Alloy additions after melting													
Ferrovanadium	4	0.50	0.0	...	...	0.50	0.0	40.00	1.6	...	...	...	...
Ferrochromium	42	0.60	0.2	...	...	0.50	0.2	...	...	60.00	25.2	...	...
Third addition of alloys													
Ferrovanadium	10	0.50	0.0	...	...	...	...	...	...	...	...	...	...
Final total with no allowance for alloy losses	805	0.74	5.9	0.59	4.7	0.32	2.6	1.46	11.7	7.30	58.4	18.55	146.6
Deducting final analysis desired		0.70		0.50		0.30		0.75		4.00		18.50	
Leaves an excess of elements for losses		0.04		0.09		0.02		0.71		3.30		0.05	

oxide, and also gases are in the metal for elimination.

18—Some of these ferroalloys like colbalt and molybdenum are preferably added with the scrap charge. When there are proper furnace conditions, a small quantity of these alloys is lost by oxidation.

After the last mentioned, alloys such as cobalt, etc., are added, oxidation of the alloys is prevented by another treatment with the same mixture, at the same time holding the temperature of the metal high during 30 minutes or more. The temperature is now dropped and a charge similar to that before used is added, except that it is somewhat less than one-half as much and contains some iron[19] scale. Tantalum[20] amounting to a certain percentage of the melt preferably is added to this charge. These additions are in packages tied to iron rods so as to be inserted by the melter at the bottom of the electric furnace. The metal immediately becomes more fluid and quiets down as the heat[21] is again raised to a high point and maintained for 10 minutes. Alloying vanadium can now be added, with only an allowance for loss as stated of 20 to 30 per cent[22] at the same time maintaining say a slightly lower temperature for about 10 minutes.

19—Dropping the temperature during deoxidation with ferroalloys is good practice but why anyone wants to add even a small quantity of iron oxide, at a time when the metal is nearly free of oxides is beyond the writer's understanding of metallurgy.

20—Tantalum is an expensive deoxidizer and probably cheaper alloys will do the work equally as well. Dr. Kelley of the Midvale Steel & Ordnance Co., says that from its position in the periodic table, tantalum might be expected to show effects similar to those of vanadium.

21—The temperature of the metal is increased only slightly by these alloy additions. It is not good practice to heat up the metal at such a time in the process.

22—Excessive loss of vanadium already mentioned.

The bath should now be quiet and appears to be free of impurities but such is not the case, as has been found from experience. The addition of further scavenging materials at this time would have some effect but the chemical action alone will not completely clear a bath of this character at this high temperature without the risk of removing some of the valuable alloying metals desired in the final analysis. A violent, almost explosive action is required[23] which acts mechanically as well as chemically to expell the residue of oxides, occluded gases, slag, fragments of brick from the furnace lining (which sometimes adhere to the side of the furnace below the surface of the bath), sulphur and phosphorus. The treatment at this time also has the function of increasing the fluidity of the bath and must be of such character as not to introduce objectionable matters into the metal.

23—On this point the writer does not agree, as other means of agitation undoubtedly are just as good, such as gentle stirring of the bath with a steel bar at certain intervals.

After holding the temperature high, a mixture of alloys of silicon, manganese, aluminum, titanium, and magnesium, is added together with a small percentage of iron oxide.[24] This mixture being composed partly of finely powdered alloys and partly of lumps, and varying in composition according to necessity and the analysis. As a general rule about 50 per cent will be lumps of about the size of nuts, and the metallic aluminum will be in small lumps. The action of this mixture of lumps and powder may perhaps be explained by assuming that as soon as the covering of the package is consumed the powder goes off, first with a comparatively violent reaction, which is immediately followed by the larger reaction due to the mass of lumps. The reaction results in what is practically an explosion at the bottom of the furnace, which not only violently disturbs the bath causing occluded gases to pass out, but also carries away any solid impurities and thoroughly mixes the entire bath. Heretofore in high speed steel it has been difficult to obtain large castings of uniform analysis owing to the different specific gravities of iron, tungsten, chromium and vanadium. But after this explosive scavenging action, there is not only a substantial freedom from sulphur, phosphorus, oxides, gases, slag and other impurities, but also a complete formation into a homogeneous alloy. If an electric furnace is being used the metal now can be poured from the furnace and is ready for the molds.

24—One of the aims of all steelmakers is to free the metal from oxides by the end of the operation, yet iron oxide again is added. Iron oxide is one of the most injurious elements in steel.

The molds are so made that the surfaces are cast within 0.015-inch of the finished tool and in most instances only requiring to be finished by sand blasting, or light grinding. Where cutting surfaces are to be ground to finish, it is preferable to allow somewhat more than 0.015-inch extra. As above stated in many instances risers are omitted entirely where before they were universally required. The heads are made small because the metal in setting in the mold has an unusually prolonged period of solidification or semisolidification, without forming pipes and without shrinkage. The fractures[25] are characteristically different in both color and texture and the steel seems to have a fineness and fiber unlike other steels, either cast or forged, which have a similar analysis. A peculiar herringbone formation has frequently been observed which is quite distinct from anything before observed in cast steels. Little or no variation occurs between the outer and the interior structure of the casting nor is there variation in the cutting efficiency between material at the outside of the casting and that at the interior. The metal, when poured, seemingly is wholly free of impurities.

25—This is not correct, as all high speed steels as cast have the same appearance no matter by what method they are made. The cast method high speed steel is not at all fibrous, but granular, and is one of the differences between cast and forged high speed steels.

Castings of high speed steel for cutting tools are annealed, rough ground to size after being bored for the arbor, heat treated, hardened, etc., according to standard practice. A further advantage of the process is that uniformity of analysis is obtained and a high durability, toughness and longevity. These ordinary high speed steels will sometimes show surface checks[26] if ground at too high a temperature, but steel made by this process does not show such effect even at red heat caused by grinding. Considerable loss occurs in heat treating forged steels due to cracks caused by strains which do not occur with this steel.

26—With the same heat treatment, cast steel cutters will show greater tendency to check.

New Safety Codes Issued

New safety codes affecting employers in the iron and steel industry have been issued by the Ohio state industrial commission, for general enforcement. The codes were prepared by committees including representatives of employers and employes, and apply to the following: Polishers and grinders, metal workers, machine tools, steel mills and foundries. Other codes adopted apply to blowers and exhausts, passenger and freight elevators, fire drills and general safety standards. Additional codes are to be drafted. All will become operative under a new state constitutional amendment.

Large Uses of Steel In Small Ways

BANDS of steel connect the great steel industry of the north with the proportionately large cotton industry of the South. These bands are known as cotton ties. While some fairly large tonnages are made in the South, one mill being located in Georgia, another in Alabama, the bulk of the tonnage is shipped south by four northern mills located in Pennsylvania.

Originally rope was used in tying up bales of cotton, then wire which was followed by ordinary steel bands, and then came the perfection of the present standardized cotton tie with its buckles which is utilized universally throughout the cotton-producing country, including the states of Texas, Georgia, South Carolina, Mississippi, Oklahoma, North Carolina, Arkansas, Alabama, Louisiana, Tennessee, California, Arizona, Missouri, Virginia, Florida and Kentucky. These states produced in 1920, 11,023,000 bales weighing 500 pounds each, all other states producing 7000 bales, making a total crop for 1920 of 11,030,000 bales, or over five billion pounds.

Entering the rolls as ordinary open-hearth or bessemer steel billets, cotton ties leave the rolls as steel hoops, 19 or 20-gage, at the rate of 2500 to 3000 feet per minute. This is too fast to be taken care of did they come straight, hence they pass through a wobbler to be curved out over a wide area and cooled. Wound on large spools, the hoops are tarnsferred to a fast revolving slitting shear, synchronized so as to cut them into 11½-foot lengths for what is termed the farm bale in use in the United States and Mexico. They then are passed over roll tables to where they are doubled back upon themselves and packed 30 bands to the bundle with 30 buckles strung on the inside fold. They are fastened together with several wrought iron bands, about ¾-inch wide twisted as a tie, and the whole package weighing 45 pounds then is dipped into a special quick-drying paint or varnish and after drying they are ready for shipment.

Cotton ties usually are made 15/16-inch wide by 35/1000-inch thick (20 gage) although sometimes 19 gage material is used. The average cotton crop will require 2,000,000 to 3,000,000 bundles, two-thirds of the world's cotton tie production. The average yearly cotton tie production is from 50,000 to 55,000 tons. After the cotton is baled at the farm gin, it is moved to the compress where the band is cut down to be from 7½ to 9 feet long, according to the type of press in use. Bales are thus compressed to economize on shipping space in common carriers. At these presses the regular buckles are sometimes replaced with heavier ones.

While cotton ties can be rerolled and used again, producers recommend that

(*Concluded on Page* 235)

COTTON TIES

THIS is the fourth of a series of articles dealing with some of the thousands of obscure uses of steel which in the aggregate go a long way toward absorbing the great American tonnage, and in proclaiming steel the universal metal. The first article on "Corsets" appeared on page 1427 *of the Nov.* 22 *issue of* IRON TRADE REVIEW, *the second on "Pins," appeared on page* 1555 *of the Dec.* 6 *issue and the third on "Pens" appeared on page* 1678 *of the Dec.* 20 *issue.*

ROLLING COTTON TIES FROM STEEL BILLETS IN THE PLANT OF A SOUTHERN STEEL COMPANY. THOUSANDS OF TONS OF THIS PRODUCT ARE USED ANNUALLY BY THE COTTON PLANTERS OF THIS COUNTRY

Reducing Lining Disintegration

After Two Linings High in Iron Oxide Had Failed Prematurely, a Third Lining Low in Iron Oxide Satisfactorily Withstood Disintegration on Same Furnace During Twelve Month Campaign

BY H. E. TOWNSEND

DISINTEGRATION by carbon deposition has been the subject of much discussion and investigation for years by consumers and manufacturers of blast furnace linings. As the result of investigations, papers on this important subject have been read from time to time, the most recent one being "The Disintegration of Fire Brick Linings in Iron Blast Furnaces," by C. E. Nesbit and M. L. Bell, read before the American Iron and Steel institute last May.

In October, 1921, John W. Gocher, until recently superintendent of the Robesonia Iron Co., started investigations along these lines in connection with two lining failures, both of which showed severe disintegration after a few months of blast to such a degree that the furnace required complete relining. After diligent research, it was concluded that these premature failures were caused by the deposition of carbon in the brick. The deposition of carbon resulted in an increase in volume due to the decomposition of carbon monoxide according to the reaction $2CO = CO_2 + C$ at temperatures of approximately 788 to 1022 degrees Fahr. This reaction and its effect on the lining brick are illustrated in Fig. 1. The findings in general were in agreement with the many other investigations made since the time of John Pattison. With this disintegration and its causes in mind, new specifications were written. They represented a distinct departure from the conventional specifications for blast furnace brick, particularly in regard to the ferric oxide content, burn, grind and method of manufacture. The most marked change was in the percentage of ferric oxide allowed, the new specifications calling for from 50 to nearly 100 per cent less ferric oxide than in the brick usually specified and furnished.

A lining was manufactured in accord with Gocher's ideas, and placed in service. During the process of manufacture, samples of the brick were taken at random from the top, inwall and hearth and bosh zones to determine the ferric oxide content. Likewise, as a check at the furnace, samples were taken and tests made as to the ferric oxide present. These several determinations showed the ferric oxide to be within the limit specified.

The Robesonia furnace with a lining conforming to the new specifications, was blown in on June 20, 1922. During April, 1923, the bosh jacket developed water leaks to such an extent that it was impossible to further operate under these conditions and on May 18, the furnace was blown out for repairs, after having been in blast approximately one year. During this campaign, it was necessary to bank the furnace once for a short period of time, due to a shortage of fuel. After this interruption in operations, the furnace made a good and normal start again. The performance of the furnace during this run was not different in any way as to burden, materials used or method of operation, from any of the runs made in recent years. In other words, the furnace operated under normal conditions. The fuel used was 100 per cent beehive coke and the product was 75 per cent low phosphorus and sulphur pig 25 per cent foundry iron. The zinc content of the ore mix was from 0.10 to 0.15 per cent. Determinations of the carbon monoxide in the gas taken at the top of the

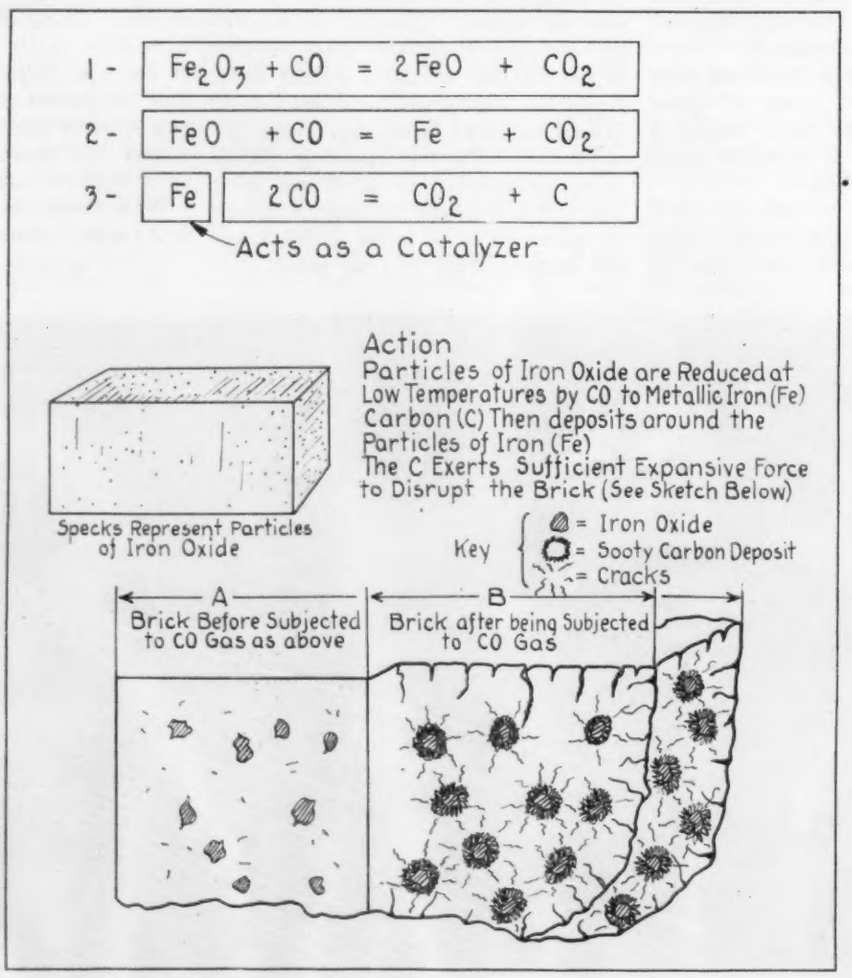

1 - $Fe_2O_3 + CO = 2FeO + CO_2$
2 - $FeO + CO = Fe + CO_2$
3 - Fe | $2CO = CO_2 + C$
Acts as a Catalyzer
Action
Particles of Iron Oxide are Reduced at Low Temperatures by CO to Metallic Iron (Fe) Carbon (C) Then deposits around the Particles of Iron (Fe)
The C Exerts Sufficient Expansive Force to Disrupt the Brick (See Sketch Below)
Specks Represent Particles of Iron Oxide
Key
= Iron Oxide
= Sooty Carbon Deposit
= Cracks
A
Brick Before Subjected to CO Gas as above
B
Brick after being Subjected to CO Gas

FIG. 1—DIAGRAM SHOWING REACTION BETWEEN IRON OXIDE IN BRICK AND CARBON MONOXIDE GAS, AND EFFECT OF THIS REACTION ON BRICK

The author is manager of sales, Haws Refractories Co., Johnstown, Pa.

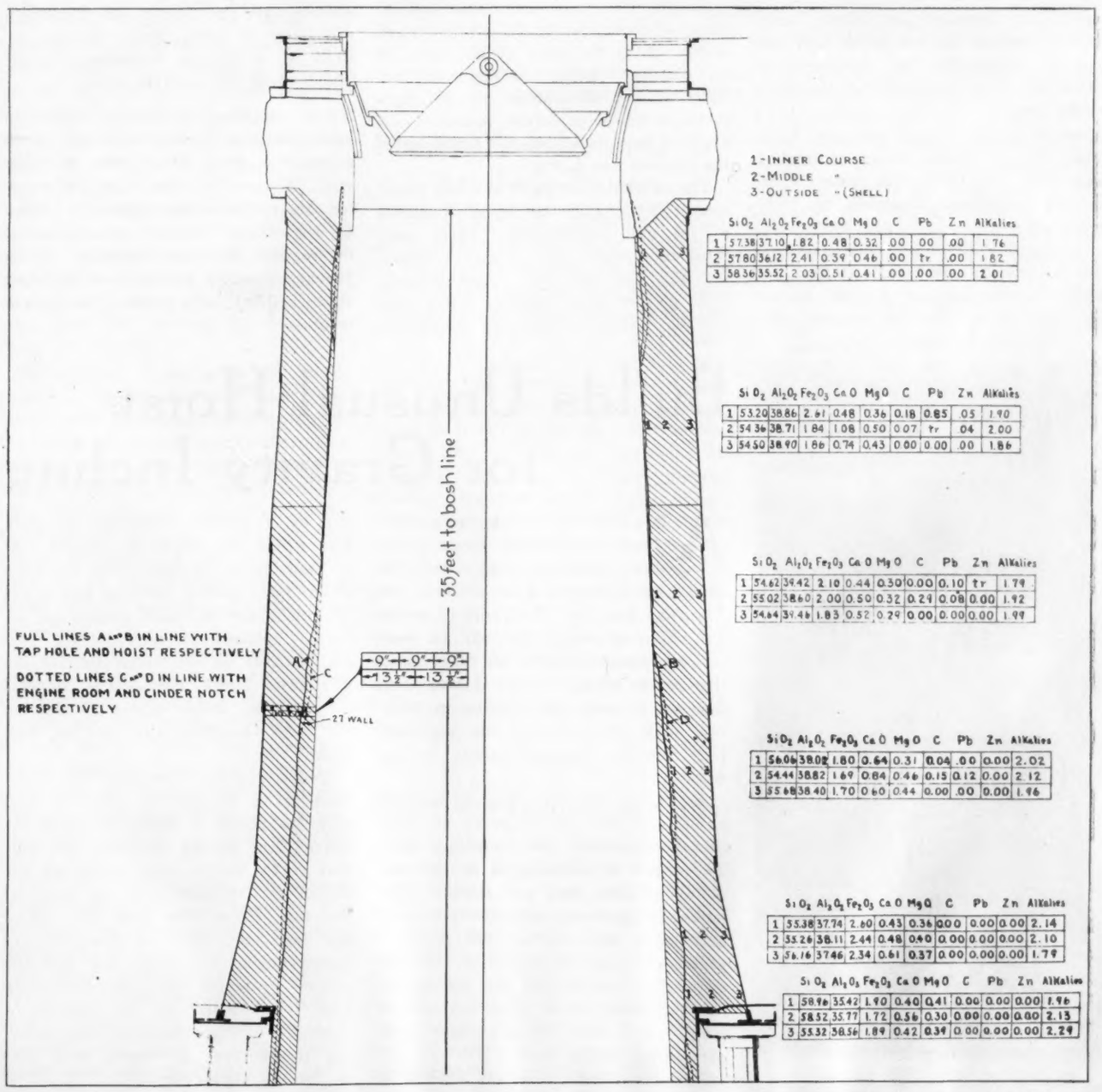
furnace from time to time showed an average of 29.03 per cent by volume. The top temperatures during the furnace operation averaged 800 degrees Fahr.

After the furnace was blown out and had cooled sufficiently to permit investigation, the usual inspection from top to bottom was made. It was found that as a result of this trip through the stack the entire lining, from the top of the furnace to three feet below the mantel ring was intact, showing no signs of pockets or excessive wear in any one spot. The surfaces of the brick exposed to the burden were all well glazed. Measurements of the wear in the lining together with the original lines when blown in are shown in Fig. 2.

There was some doubt as to whether the stack lining should be removed, due to its good condition and lack of wear. Owing to the fact a change in the design of the hearth and bosh was contemplated and to the fact that the lining for replacement, of the exact specifications as the one in question, was on the ground, it was decided to reline.

When the old lining was being taken out, particular pains were exercised in the removal and examination of the brick to locate and determine to what degree disintegration of the brick had taken place. From the top to three feet below the mantel ring there was an absence of the usual signs of disintegration; broken, cracked or pulverized brick were conspicuous by their absence. Upon breaking numbers of the brick, no signs of carbon deposition were found. As the lining was torn out, samples of the brick were taken at various distances from the top and determinations made. These are shown and tabulated in Fig. 2.

In view of the foregoing, there is no doubt but what the low ferric oxide content in the lining was primarily responsible for the lack of disintegration. The furnace was in operation long enough to determine this


1-INNER COURSE
2-MIDDLE "
3-OUTSIDE "(SHELL)
35 feet to bosh line
FULL LINES A and B IN LINE WITH TAP HOLE AND HOIST RESPECTIVELY
DOTTED LINES C and D IN LINE WITH ENGINE ROOM AND CINDER NOTCH RESPECTIVELY
27 WALL
9" 9" 9"
13½" 13½"

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	C	Pb	Zn	Alkalies
1	57.38	37.10	1.82	0.48	0.32	.00	00	.00	1.76
2	57.80	36.12	2.41	0.39	0.46	.00	tr	.00	1.82
3	58.36	35.52	2.03	0.51	0.41	.00	.00	.00	2.01

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	C	Pb	Zn	Alkalies
1	53.20	38.86	2.61	0.48	0.36	0.18	0.85	.05	1.90
2	54.36	38.71	1.84	1.08	0.50	0.07	tr	.04	2.00
3	54.50	38.90	1.86	0.74	0.43	0.00	0.00	.00	1.86

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	C	Pb	Zn	Alkalies
1	54.62	39.42	2.10	0.44	0.30	0.00	0.10	tr	1.79
2	55.02	38.60	2.00	0.50	0.32	0.24	0.08	0.00	1.92
3	54.64	39.46	1.83	0.52	0.29	0.00	0.00	0.00	1.99

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	C	Pb	Zn	Alkalies
1	56.06	38.02	1.80	0.64	0.31	0.04	.00	0.00	2.02
2	54.44	38.82	1.69	0.84	0.46	0.15	0.12	0.00	2.12
3	55.68	38.40	1.70	0.60	0.44	0.00	.00	0.00	1.96

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	C	Pb	Zn	Alkalies
1	55.38	37.74	2.60	0.43	0.36	0.00	0.00	0.00	2.14
2	55.26	38.11	2.44	0.48	0.60	0.00	0.00	0.00	2.10
3	56.16	37.46	2.34	0.61	0.37	0.00	0.00	0.00	1.79

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	C	Pb	Zn	Alkalies
1	58.96	35.42	1.90	0.40	0.41	0.00	0.00	0.00	1.96
2	58.52	35.77	1.72	0.56	0.30	0.00	0.00	0.00	2.13
3	55.32	38.56	1.89	0.42	0.39	0.00	0.00	0.00	2.29

FIG. 2—VERTICAL SECTION OF FURNACE ABOVE MANTLE SHOWING LINING AS INSTALLED. LINES *A*, *B*, *C* AND *D* SHOW LINING AFTER FURNACE WAS BLOWN OUT. THE ANALYSES OF THE BRICK LINING WERE TAKEN AT THE VARIOUS POINTS INDICATED AT THE TIME BRICK WERE REMOVED

fact. Moreover, the furnace temperatures and high carbon monoxide content in the furnace gas were favorable to disintegration. The fact that zinc was present in such quantities given above, with the furnace operating under normal conditions to produce disintegration, coupled with the fact that no disintegration was found in the lining, substantiates the statement made by Nesbit and Bell that "apparently zinc does not cause failure by disintegration."

The opinion among many blast furnace men seems to be that when specifications are written covering the ferric oxide content in the brick that instead of establishing a definite limit, the term "as low as possible" will be used. There still seems to be some doubt as to just what amount of ferric oxide can be present in the brick and still not be responsible for disintegration. However, it is apparent that the ferric oxide content of blast furnace brick must be more than 50 per cent lower than that of brick usually furnished, especially for stacks that maintain operating conditions favorable to disintegration.

A number of brick manufacturers are devoting a great deal of time and study to the subject of iron content in their clays. At the present time fire clays are available which are undoubtedly low enough in iron to make unnecessary any treatment for the purpose of further reducing the iron. It is quite likely that those clays which are not low enough in iron will have to be subjected to some form of treatment, such as weathering for at least several months, somewhat after the recommendations of Nesbit and Bell. Others are of the opinion that the same result can be accomplished by grinding the clay and removing the iron by magnetic separation.

Carnegie Company Issues Safety Calendar

A calendar for 1924 issued by the Carnegie Steel Co. contains some original ideas in broadcasting the principle of safety. It is the result of the work of the company's general safety committee. Each of the illustrations on 13 pages carries a lesson in safety, conceived and executed by a school pupil in towns where the company has a plant.

The committee arranged a safety poster contest in the public and parochial schools of the mill communities. There were three cash prizes given in each community, $25, $15 and $10. Approximately 7500 posters were entered. Each page of the calendar bears an exact reproduction of the poster drawn by a school child, and each plant is represented on one of the pages. Every line of the child's work is carried out, and every color is reproduced by a five-color process. A portrait of each child appears by the side of his or her poster in the calendar with his or her name, age, grade, school and home community. In selecting the posters for the calendar, the committee did not confine itself to prize winners.

Much interest was displayed by school officials, and in some communities the art instructors will make this feature a part of the school work each year. There also has been a request from the officials for another contest, which will be put on sometime during the school year by each of the communities. In addition, all the schools of Pittsburgh will enter a safety poster contest, instead of a few as heretofore, in the neighborhood of Carnegie plants.

The response of certain steels to heat treatment formed the subject of a paper read by Prof. John H. Nelson, Wyman Gordon Co., Worcester, Mass., before the Worcester branch of the Metal Trades association at the regular December meeting. At the January meeting Professor Kingsbury, Newark, N. J., will speak on tool room troubles.

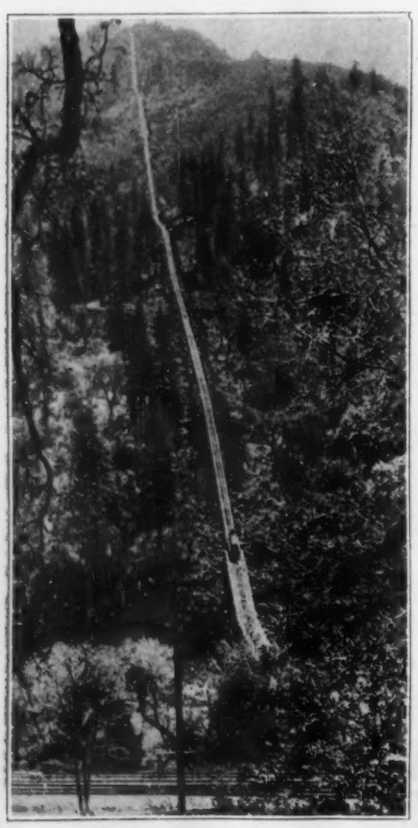


FIG. 1—GRAVITY INCLINE OPERATED BY AN ELECTRIC HOISTING MACHINE EMPLOYING REGENERATIVE BRAKING

Builds Unusual Hoist for Gravity Incline

AN UNUSUAL hoisting and lowering machine recently has been designed, built and installed by Llewellyn Iron Works, Los Angeles, for the Yosemite Lumber Co., Merced Falls, Cal. It is used for lowering carloads of logs down the incline shown in Fig. 1 and hauling up locomotives, logging machinery, tank cars of fuel oil and supplies for the logging camps in the woods.

A loaded car of logs is lowered on this incline about every 10 minutes throughout the working day. The speed of lowering is at the rate of about 1300 feet per minute. The incline is approximately 9000 feet long and has a total fall of 3000 feet, the grades varying from 12 to 66 per cent. The upper part of the incline for something more than half of its length is double tracked, the lower part being single track.

The rope, which is 1¼ inches in diameter, is carried around curves by vertical and horizontal rollers of special construction and it is also carried by V groove rollers on the main line where the track is straight. At the low points in the incline the rope would raise several hundred feet above the track and at these points are located "holddowns" each having several sheaves on the under side of the structure. These hold-downs depress the rope to within about 20 feet of the track, enabling the cars to pass under them.

Under regular operation when the hoist is in service of lowering logs only, no power is required except for starting the empty car from the bottom of the incline and permitting the loaded car to pass over the crest at the top. From the time this action has been completed no power is required during the entire trip and the power generated by the descending load is absorbed by the brakes or expended in regenerative braking sending the current generated back into the power supply lines.

The main base of the machine, which is shown in Fig. 2, is made of heavy H-sections 14 inches wide, upon which

are mounted all of the bearings. The main drive when running at the normal speed of 1300 feet per minute is through the main pinion shaft to both drum gears. Under this condition of operation one or both of the clutches are thrown in depending upon whether one or two motors are used. When it is desired to hoist the heavy loads the slower speed of about 250 feet per minute is used and this is accomplished by disengaging the friction clutches and throwing in the speed reduction gears.

There are two drums set tandem and the hoisting rope passes around both drums. One of the drums is fleeted or set at an angle with the other drum by sloping the drum shaft and the drum so that the rope will pass in a straight line from the grooves of one drum to those of the other drum, thus preventing abrasion of the sides of the grooves and the rope which would take place if the drum shafts were in the same plane and the rope passed from one drum to the other at an angle.

The indicator which shows the location of the car on the incline is of the self-adjusting type and automatically adjusts itself to the position of the car at the end of each trip, thus compensating for any rope creep or slippage.

On account of the great amount of power to be absorbed and the consequent heat generated by the brakes, the brake rings are arranged with a hollow annular chamber, forming a water jacket, through which cooling water is continually circulated. The hydraulic pressure for actuating the brakes, clutches and rope grip is supplied by an electrically driven triplex pump working against a hydraulic accumulator.

A rope grip is provided as a safety measure. This stands on the foundation between the two drums and clamps all four passes of the rope at this point. When the cars are being detached from the rope this rope grip is applied and positively prevents unwinding from any cause. The rope grip is operated hydraulically.

The hoist is driven by two motors of 200-horsepower each, built by the Westinghouse Electric & Mfg. Co., Pittsburgh.

All parts of the machine except the grease cups were made in the plant of the Llewellyn Iron Works. The structural steel gallows frame, holddowns and all guide sheaves and rollers for the incline also were designed and fabricated by Llewellyn Iron Works.

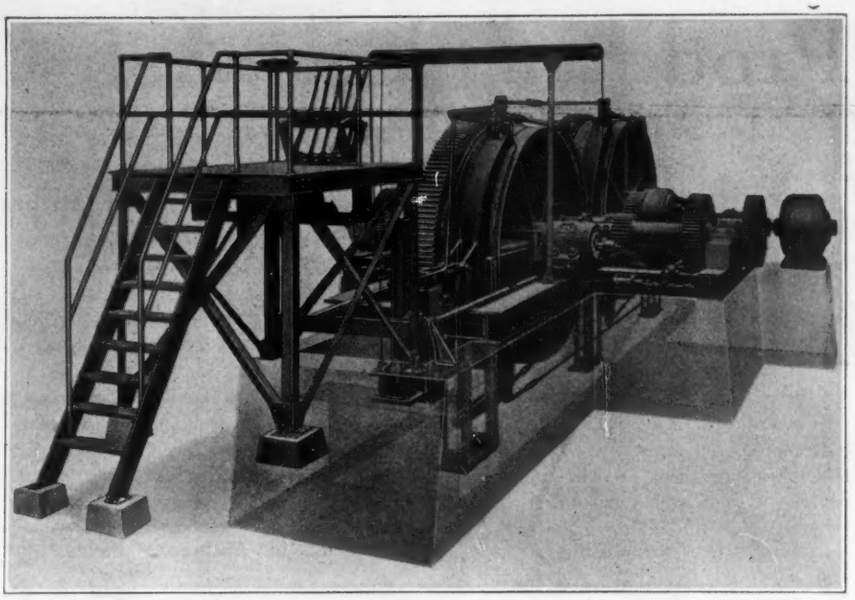


FIG. 2—VIEW OF HOISTING AND LOWERING MACHINE, SHOWING MOTORS, GEARS, DRUMS, BRAKES AND CONTROL PLATFORM

Makes Foundry Iron by Synthetic Process

The feasibility of producing a good grade of foundry iron from steel scrap in the electric furnace has been demonstrated in experimental work performed at the Northwest experiment station of the bureau of mines, Seattle. This development permits any manufacturing plant to use all its iron scrap on the spot in making castings equal to if not better than those from cupola iron. Improved methods of charging the 300-pound experimental furnace used gave more rapid carburization, and carbon contents as high as 5 per cent were reached. Several heats were made in a 1-ton commercial electric furnace of the Heroult type, at Hoquiam, Wash., and in a 1-ton indirect-arc, rocking furnace in a foundry at Detroit. In every case, these tests were successful in producing sound, strong gray iron from steel scrap and iron turnings.

Describes Trade Standards

A pamphlet entitled "Trade Standards Adopted by the Compressed Air Society" recently has been published, embodying the results of research conducted by the engineers and executives associated with that society. The pamphlet contains information on the nomenclature relating to air compressors and their operation, a history of the development of speeds of air compressors, an explanation of capacities and pressures, instructions for installing and caring for compressors, recommendations for lubricating machines and cleaning air receiver piping, a description of the low pressure nozzle tests recommended by the society and a partial list of the applications of compressed air. Copies may be obtained from C. H. Rohrbach, 50 Church street, New York, secretary of the society.

Large Uses of Steel

(*Concluded from Page* 231)

the cottom packers buy new ties each time to obtain proper strength and durability for the great strain and shock to which the baled cotton is subjected in shipping between the gin or compress, and the consuming mill.

These ties occasionally are utilized for other purposes than cotton baling, such as the baling of cloth or waste paper; sundry products in China and Japan; and wool in South America and Australia. Sometimes they are cut 12 feet long and are sold in bundles weighing 60 pounds. At best but a small percentage is exported. Exports are irregular, depending entirely upon the cotton crop and English and German competition, England and Germany being the principal foreign producers. In recent years exports have not averaged more than 750 tons annually, chiefly to Mexico, India and Egypt. Mexican ties are the same as domestic but Indian and Egyptian are rolled slightly narrower and heavier and are cut to longer lengths.

Imports are negligible. Imports of all hoop and band iron, etc., in 1915 aggregated only 1,415,438 pounds, valued at $22,552. In 1920 they totaled 131,370 pounds, valued at $5952, and in the first nine months of 1921 they were 1,055,366 pounds, valued at $32,883.

Producing Low-Ash Coking Coal

Differential Separation Affords Possibility of Obtaining Desirable Fuel from Impure High-Ash Coal Which Is Available in Large Quantity in Many Mining Districts—First Tried in Anthracite Field

BY H. M. CHANCE

ALMOST all coking coal districts contain large quantities of coking coal of higher grade than any heretofore available for making low-ash metallurgic coke. This high grade coal contains less than 5 or 4, or possibly less than 3 per cent of ash. It may not be low in sulphur, but has often a smaller percentage of sulphur than coals now used, and its low percentage of ash indicates the probability of a lower percentage of phosphorus.

This low-ash coal exists in coal beds of both good and poor quality and is scattered through the coal in masses from ¼ inch up to 1, 2, 3 or 4 inches in diameter. There is no visible distinction between these masses of pure coal and impure coal. Coal is not a homogeneous substance, but is one in which the ash is usually irregularly distributed. Nearly all coal beds producing merchantable coal contain an important percentage of low-ash coal.

Ash Affects Specific Gravity

As the specific gravity of each piece of coal depends upon the quantity of ash present in that piece, the differences in specific gravity can be used for separating the low-ash and high-ash coal. The specific gravity increases about .01 for each per cent of ash. Thus if coal with 5 per cent ash has a specific gravity of 1.35 the same coal with 6 per cent ash will have a specific gravity of about 1.36.

If separation be made by a "float and sink" method by introducing the coal into a liquid of the desired specific gravity, as for example 1.36, all the coal having a specific gravity less than 1.36 will float and all the coal having a greater specific gravity will sink. An exact separation thus can be made, dividing the coal into two grades, the low-ash grade in this case having less than 6 per cent ash.

Solutions of high gravity liquids can be used for making such separations experimentally, but not commercially.

However, the sand flotation process can be used by which a liquid of any desired specific gravity can be produced and utilized to make such separations. The sand flotation process utilizes an agitated mixture of sand, or other suitable material, and water as a "fluid mass" of relatively high specific gravity. The sand is kept in suspension in the water by controllable means for providing agitation and readily can be maintained at any desired specific gravity. The specific gravity is under close control and can be varied accurately at will.

The author is consulting mining engineer, 839 Drexel building, Philadelphia.

Used in Anthracite Fields

This process was introduced in the anthracite districts of Pennsylvania two years ago. There now are six plants in operation and another soon will be completed. The plants have a combined capacity to treat over 1,000,000 tons annually and represent investments aggregating about $1,000,000.

In the sand flotation method every piece of coal of less than a certain specific gravity will float, whether the pieces be large or small. Therefore, in using the process for washing bituminous coal, crushing should be reduced to a minimum. In many cases the separation can be made without crushing the coal smaller than to 3 or 4-inch size. In other cases crushing to perhaps 1½ or 2-inch size may be necessary, the object being to separate low-ash coal from coal containing a larger percentage of ash. To avoid the difficulties which wetting of the fine coal entails, coal smaller than ⅛ mesh or perhaps smaller than ¼ mesh, should be screened out. Ordinarily this fine coal will not require washing, because in many cases it does not contain a large percentage of ash, and, owing to the fact that all of the coal has not been finely crushed the percentage of this fine material is relatively small. Therefore, this dry material often can be added to the washed coal without objectionably increasing the ash percentage in the finished product. However, if this finer material carries a large percentage of ash, it cannot be added to the low-ash coal without washing it to lower its ash.

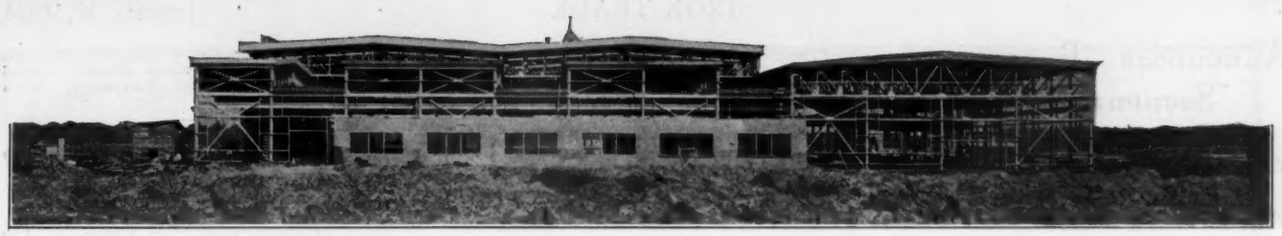
Treating Run of Mine Coal

If the machine is fed with run-of-mine coal, the larger lumps of which have been crushed to 3 or 4-inch size, and material smaller than ⅛ or ¼ inch has been removed prior to the coal being fed into the machine, and the separating fluid mass is kept at a specific gravity high enough to float all of the coal, good, bad, and indifferent, but low enough to permit all of the slate, pyrite and rock to sink, a preliminary cleaning of the coal by the removal of these heavy impurities will be effected. The coal floating in this first machine will then overflow into a second machine in which the specific gravity is just sufficient to float the grade of low-ash product which is to be separated, and to permit all of the heavier coal to sink, thus dividing the coal into two products, the first a low-ash product and the second a higher ash product, the separation having been accomplished without fine crushing of the coal. The higher ash product may be utilized directly as a steam fuel, or may be marketed as such. But if the larger lumps of this higher ash coal contain low-ash coal which can be separated by crushing, and if it be desired to increase the percentage of low-ash coal recovered, these larger pieces can be crushed to somewhat smaller size, and the crushed product returned for retreatment to the first machine.

Little Sludge is Made

If carried out as above described the process will eliminate most of the troubles in coal washing plants caused by the fine coal or sludge, because little sludge will be made and but little will be permitted to enter the machine. The action of the separating fluid mass causes no attrition and the only sludge producing element in the plant is a desanding screen over which the coal, after it leaves the separator, is passed for the removal of the sand, and this produces a small quantity of sludge. Whatever sludge is produced, and that which the preliminary screening fails to remove, of course will be recovered, and the water clarified for reuse, by methods available for this purpose.

The adoption of the process to the treatment of bituminous coals promises to be of special value to the iron and steel industries in supplying for blast furnace operation a means of producing coke that is purer and better than any heretofore available. It also will benefit these industries and other consumers of coal desiring or requiring a low ash product by adding to the available low-ash coal resources enormous quantities which heretofore have not been recognized as available.



New Warehouse and Fabricating Plant of Lukens Steel Co. on Turning Basin of Industrial Canal at New Orleans Combines Both Services Under One Roof—Efficient Mod ern Equipment Provided

Build Warehouse on New Orleans Canal

WAREHOUSING and fabricating will be carried on under the same roof in the new plant of the Lukens Steel Co. on the $20,000,000 industrial canal being built by the state of Louisiana connecting Lake Pontchartrain and the Mississippi river at New Orleans. This is the first industry to take advantage of the new waterway.

The plant is located on that part of the canal known as the turning basin which is approximately 800 feet square and as its name indicates is a place where ships can turn to retrace their course without having to go out into Lake Pontchartrain or the Mississippi river to turn. Directly to the east on the canal proper is the new Claiborne avenue wharf which is being constructed by the board of port commissioners of the port of New Orleans. This new wharf will be over 2000 feet long and 200 feet wide.

The Lukens plant will have a warehouse and fabricating unit. In the warehouse are two bays, each 80 feet wide and 220 feet long. Each bay will have a 5-ton double-trolley crane for the full span of 80 feet. This crane was built by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. The clear span under the crane rail in each bay will be 25 feet. These bays will afford storage for plates and structural shapes.

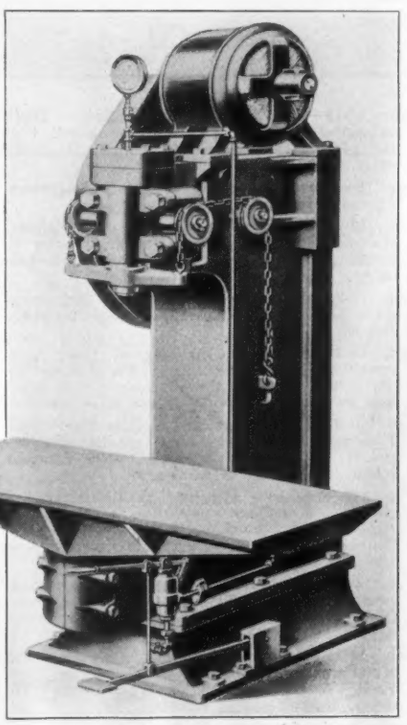
Adjoining the structural shape bay to the east is a bay 80 feet wide by 100 feet long where sheets, rivets, bolts, boiler tubes, shafting, staybolt iron, tool steel, key steel, and similar material will be stored. At the south end of this small warehouse and overlooking the structural bay, is the shipping department where all shipments from the warehouse are assembled and loaded onto trucks for shipment.

Incoming material can be handled either from barges or cars. Tracks at each end of the plant run at right angles to the plate and structural bay where material up to 75 feet in length can be unloaded easily and quickly. The beam, plate and angle shears are so placed that cutting for shipment and fabrication are done at the same tools. The material for warehouse shipment can be loaded on trucks at the shear and if for fabrication it is carried to the laying-out bay.

The fabricating shop is 80 feet wide and 240 feet long. Running the entire length of the shop are six 2½-ton single I-beam cranes, built by the Shepard company. The shop is equipped with all the latest tools for fabrication so placed as to require a minimum movement of material. At the west end of the shop a crane, built by the Orton & Steinbrenner Co., Chicago, will be used to load fabricated material on cars.

At the south end of the fabricating shop is a lean-to 20 feet wide and 160 feet long housing the motor generators, compressors, superintendent's office, store room lockers and showers. Offices are in a separate building northeast of the warehouse.

Agreement whereby all railroads operating in Wisconsin will use cabooses with steel underframes or center beams at points of heavy pull was reached at a hearing conducted by the state railroad commission. Cabooses now in use having wooden underframes will be replaced as quickly as possible, no special time limit being set at present in order that the railroads may not be unduly burdened under present conditions.



PRESS USED IN BENDING, STRAIGHTENING AND FORGING OPERATIONS

Hydraulic Press Is Used in Automobile Work

For use in bending, straightening and forging operations, the Watson-Stillman Co., New York recently has introduced a rapid working hydraulic press. While the press was designed primarily for straightening cam shafts, crank shafts and automobile front axles, it also can be used for any work requiring pressure up to the full capacity of the press.

The machine is quick-acting and the speed and pressure is controlled by a valve operated either by hand or foot lever. The pump is so arranged that the movement of the press ram through the idle portion of the stroke is rapid, and the change from low to high pressure for the actual straightening operation is effected automatically. The entire table can be removed, thus leaving an open jaw forcing press for shop use in such operations as mandrel forcing, broaching, force fitting, etc.

The unit is motor driven with all working parts under easily removable dirt proof guards. The frame is a steel casting with a copper-lined cylinder bolted and keyed to the frame. The base is of cast iron and serves as a reservoir for the pump. The ram has a positive stop to prevent overstroke. Hydraulic pressure is used only for the pressure on the downward motion of the ram, the return being accomplished by a counterweight placed inside the frame.

The press is equipped with a slow speed motor and with single reduction gearing to the pump shaft is shown in the accompanying illustration.

Announces Program for Sectional Meeting

The fifth sectional meeting of the American Society for Steel Treating will be held under the auspices of the Rochester chapter at the Hotel Seneca, Rochester, N. Y., on Jan. 31 and Feb. 1. One of the important features of the meeting will be a joint banquet by the visiting members and guests, the Rochester chapter and the chamber of commerce, given in honor of Dr. George K. Burgess, president of the society. Dr. Rush Rhees, president of the University of Rochester, will be the toastmaster. The subject of Doctor Burgess' address at the banquet will be "The Relation of Government to Industry."

Following the usual schedule for the two-day session, technical papers will be presented on Thursday, Jan. 31. The papers to be presented are as follows: "Some Carbon and High Speed Steels Used in the Manufacture of Small Tools," by A. H. d'Arcambal, chief metallurgist, Pratt & Whitney, Hartford, Conn.; "Control of Production by Scientific Methods," by Prof. H. M. Boylston, head of the department of metallurgy, Case School of Applied Science, Cleveland; "Treatment of Tool Steel" by J. V. Emmons, chief metallurgist, Cleveland Twist Drill Co., Cleveland; "The X-Ray in Steel," by Dr. Ancel St. John, Union Carbide & Carbon Co., Long Island City, N. Y.; "Structure of Metals" by O. W. Ellis, assistant professor in metallurgy, University of Toronto, Toronto, Can.

On Friday, Feb. 1 the board of directors will hold its regular meeting while the members and guests in attendance will tour the industrial plants. At the Gleason Works, electric furnaces for treating high speed steel and for treating gears and electric core ovens will be shown in operation. The Taylor Instrument Co., will demonstrate how thermometers are made. A visit to the plant of the Bausch & Lomb Optical Co. will be made and a complimentary lunch will be served by this company. Special attention will be paid to the research laboratory of the Eastman Kodak Co.

Engineers Plan Meeting

The midwinter convention of the American Institute of Electrical Engineers will be held at the Bellevue-Stratford hotel, Philadelphia, Feb. 4 to 8. Special features of the convention which will attract wide attention are a series of talks by railroad officials and other prominent men, the celebration of the fortieth anniversary of the institute, the presentation of the Edison medal and the dedication of the Moore School of Electrical Engineering. In the technical program are included papers on transmission, telephony, electrophysics and a number of other engineering subjects. Among the scheduled inspection trips is a visit to the plant of the Bethlehem Steel Co.

Convention To Discuss Safety Problems

A joint meeting of the engineering section of the National Safety council and the American Society of Safety Engineers will be held on Jan. 22 at the Engineering Societies building, 29 West Thirty-ninth street, New York. The program will be featured with papers on the subjects of handling material and gas and electric welding. The program is as follows:

Morning Session

General topic, Handling Material. "Causes of Accidents in Handling Material," by David S. Beyer, vice president, Liberty Mutual Insurance Co., Boston; "Eliminating Material Handling Accidents by the Use of Conveyors," by George C. Agry, assistant industrial sales manager, the Lamson Co., Syracuse, N. Y.; "Eliminating Material Handling by the Use of Trucks, Including Lift Trucks," by A. L. Lewis, president, Lewis Shepherd Co., Boston. Discussion: Our greatest problem in handling material.

Afternoon Session

"Safety in Electric Welding and Cutting," by D. C. Deyoe, General Electric Co., Schenectady, N. Y.; "Safety in Gas Welding and Cutting," by H. S. Smith, Union Carbide & Carbon Corp., Long Island City, N. Y.; "Glare—What It Is and What It Does," by Charles Sheard, research laboratories, American Optical Co., Southbridge, Mass.; "The Hazard of Fuel Oil for Domestic Purposes," by Peter Spence, chief fire prevention bureau, New York.

Evening Session

Dinner at banquet rooms, 200 Fifth avenue. Toastmaster, George T. Fonda. Speakers: Dr. Loyal A. Shoudy, chief surgeon, Bethlehem Steel Corp.; Dr. E. George Payne, Columbus university; David Van Schaack, director, bureau of inspection and accident prevention, Aetna Life Insurance Co.

Convention Calendar

Jan. 17-19—Gas Products association. Tenth midwinter convention, Blackstone hotel, Chicago. C. T. Price, 140 South Dearborn street, Chicago, is secretary.

Jan. 18—American Society of Safety Engineers. Annual meeting in New York.

Jan. 22-24—Engineering Institute of Canada. Meeting at Montreal and Ottawa. Frazier F. Keith, 178 Mansfield street, Montreal, is secretary.

Jan. 22-25—Society of Automotive Engineers. Annual meeting, General Motors building, Detroit.

Jan. 23-24—American Institute of Steel Construction. Annual meeting William Penn hotel, Pittsburgh. Charles F. Abbott, 350 Madison avenue, New York, is executive director.

Jan. 31-Feb. 1—American Society for Steel Treating. Winter sectional meeting, Rochester, N. Y. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Fig. 4-8—American Institute of Electrical Engineers. Midwinter convention at the Bellevue-Stratford hotel, Philadelphia. F. L. Hutchison, 29 West Thirty-ninth street, New York, is secretary.

Feb. 4-9—American Ceramic society. Annual meeting, Atlantic City, N. J. R. C. Purdy, Ohio State University, Columbus, O., is secretary.

Feb. 18-21—American Institute of Mining and Metallurgical Engineers. Meeting in New York. F. F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

April 24-26—American Electrochemical Society. Spring meeting at Philadelphia, Dr. Collin G. Fink, Columbia university, New York, is secretary.

Indiana Foundrymen To Hold Conference

Announcement has been made by the engineering extension service, Purdue university, Lafayette, Ind., of the program for the second annual conference of Indiana foundrymen, which is to be held at the university, Jan. 17-18. The program, of the conference, which is being held under the department of practical mechanics of the university, is as follows:

THURSDAY, JAN. 17

Morning Session

Registration, visit to various engineering laboratories, luncheon.

Afternoon Session

"Selective Training for Foundry Work," by R. E. Wendt, instructor in foundry, Purdue university; "Foundry Foreman as a Teacher," by G. F. Buxton, assistant professor, industrial education, Purdue university; "Metallurgy in Gray Cast Iron," by E. J. Lowry, Hickman, Williams & Co., Chicago; "Manufacture of Steel Castings," by William Woodhill, National Car Coupler Co., Attica, Ind.; "Making of Semisteel Castings," by G. W. Gilderman, Dodge Mfg. Co., Mishawaka, Ind.

Evening Session

Meeting of Indiana Foundrymen's association and smoker.

FRIDAY, JAN. 18

Morning Session

"Electric Furnace Product in the Foundry," by W. K. Booth, Booth Electric Furnace Co.; Chicago; "Nonferrous Metals," by E. G. Jarvis, Niagara Falls Smelting & Refining Co., Buffalo; production work motion pictures, by the Beardsley & Piper Co., Chicago.

Afternoon Session

Demonstration heat by the use of the electric furnace. Gray iron heat in the university foundry by students. Visit and inspection of shops.

Foundrymen Hold Election

Norman Russell, president, Albert Russells & Sons Co., Newburyport, Mass., was elected president of the New England Foundrymen's association at the twenty-eighth annual meeting held Wednesday night, Jan. 9, at the Exchange club, Boston. It was an interesting coincidence that on the same evening the foundrymen's clubs of Newark, N. J., and Philadelphia also held their annual meetings. Telegrams expressing friendly interest and a desire to co-operate were exchanged between the three organizations during the evening. Other officers elected at Boston were R. F. Harrington, Hunt Spiller Mfg. Co., South Boston, vice president; George H. Gibby, Gibby Foundry Co., East Boston, treasurer; Fred S. Stockwell, Barbour Stockwell Co., Cambridge, Mass., secretary, and the following board of directors: H. P. Blumenauer, Arcade Malleable Iron Co., Worcester, Mass.; H. S. Chaffe, Providence, R. I.; T. Officer, Clairmont, N. H.; Carl H. Newnan, New Britain, Conn., and C. A. Reed, Boston.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

J. K. LARKIN announces his resignation as president of J. K. Larkin & Co., Inc., New York. This company was organized by Mr. Larkin 23 years ago, and under his direction has steadily grown to its present proportions. Mr. Larkin has been actively associated with the steel industry for 32 years.

* * *

J. F. Chambon, recently made factory manager of the Pittsburgh Bridge & Iron Works, Rochester, N. Y., was formerly factory superintendent of the Burger Iron Co., Akron, O.

* * *

Harold F. Marshall, recently appointed advertising manager for Warren Webster & Co., Camden, N. J., maker of steam heating systems and steam specialties, was formerly advertising manager for Dwight P. Robinson & Co., Inc., New York.

* * *

Charles D. Terry, connected with National Tube Co., Pittsburgh, since 1897, and since 1911 in the general office in that city as assistant to the general superintendent, has resigned to become vice president of the Boss Mfg. Co., Kewanee, Ill., manufacturer of fabric gloves and mittens for working men.

* * *

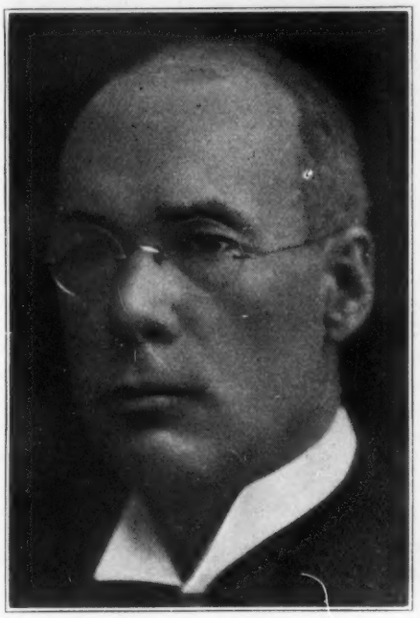
William Banfield has resigned as vice president and general manager of Follansbee Bros. Co., Steubenville and Toronto, O., and will retire after having been affiliated with the tin plate industry for about 60 years, the last 20 of which were with the Follansbee company.

* * *

Norman W. Foy, formerly associated with the Buffalo district sales office of the Republic Iron & Steel Co., has been appointed assistant manager of sales of the eastern district for that company with headquarters in the Scollay building, Boston. He will be succeeded in Buffalo by Allan Hill, formerly Canadian representative for the Republic company with headquarters in Toronto.

* * *

Robert M. Carter, recently made manager of the H. A. Smith Machinery Co., Syracuse N. Y., machine tool dealer, was formerly sales manager of the Kempsmith Mfg. Co., Milwaukee. Mr. Carter obtained his first practical expericene in manufacturing with the Lowell Machine Shops, now the Saco-Lowell Shops, Lowell, Mass. Among the many positions which he has held are: sales manager, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.; vice president and works manager, Peru Castings & Machinery Co., Peru, Ind.; production manager, Chain Belt Co., Milwaukee, etc.



J. K. LARKIN

* * *

William La Coste Neilson, general sales manager, Norton Co., Worcester, Mass., sailed Jan. 5 for a three months' business trip in Europe. Howard W. Dunbar, assistant to general sales manager, and Herbert A. Stanton, assistant treasurer, Norton Co., Worcester, Mass., are spending the month of January on business in Cuba.

* * *

Philip L. Smith, formerly with Naylor & Co., Inc., for 20 years, recently relinquished his interests in William H. Mills & Co., Inc., to assume the management of the ore and metal department of H. Hollesen, Inc., importer and exporter, New York, with connections and representatives in principal markets.

* * *

A. L. Schuller is located at the office of Brown & Sites Co., 30 Church street, New York, as direct representative of the industrial division of the Lakewood Engineering Co. The Brown & Sites Co. is eastern representative of the Lakewood Engineering Co. on its general construction machinery. A previous item made it appear that Mr. Schuller was manager of the industrial division of the Brown & Sites Co.

* * *

W. C. Stevens, recently made director of developments for the Cutler-Hammer Mfg. Co., Milwaukee, manufacturer of electric controlling devices, was formerly general sales manager of that company. He was graduated from Cornell university. Since joining the company in 1906, Mr. Stevens has been in the engineering department, head of the steel mill sales engineering, district manager of various offices and a member of the board of directors.

G. S. Crane has been appointed general sales manager to succeed Mr. Stevens. Mr. Crane was graduted from the University of Michigan, entering the employ of the Cutler-Hammer company in 1910. Previous to his recent advancement he had been connected with the engineering department, on the Pittsburgh office staff, and manager of the Cleveland office. For the past three years he had been controller of sales in the main offices at Milwaukee.

* * *

Robert M. Bird has resigned as engineer of tests at the Bethlehem, Pa. plant of the Bethlehem Steel Co. to associate himself with George F. Pettinos, 1206 Locust street, Philadelphia, in the business of sand, gravel, foundry supplies and plumbago. Mr. Bird is a vice president of the American Society for Steel Treating and a member of the standards committee of the iron and steel division of the Society of Automotive Engineers. He is member of several committees in the American Society for Testing Materials. Graduated as a mechanical engineer at Lehigh university in 1902, he came into the Bethlehem Steel Co. as one of a number of college graduates chosen for scholarship and for character. He became connected with the Bethlehem company's heat treatment department and in less than three years was made its superintendent. At the end of the war he was appointed metallurgist at the Bethlehem plant and later engineer of tests.

Albert P. Spooner has been appointed

to succeed Mr. Bird as engineer of tests at the Bethlehem plant. Mr. Spooner is a Lehigh university graduate. He had been assistant to Mr. Bird.

* * *

Guy E. Tripp, chairman of the board of the Westinghouse Electric & Mfg. Co., has been elected a trustee of the American Surety Co., New York.

* * *

James H. Hammond, president of the Superior Steel Corp., Pittsburgh and Carnegie, Pa., has been elected president of the board of the Homeopathic hospital, Pittsburgh.

* * *

H. R. Atwater, recently made representative on the Pacific coast for W. W. Sly Mfg. Co., Cleveland, was formerly sales manager of the Osborn Mfg. Co., that city.

* * *

Frederick N. Dillon, Jr., has resigned from the Dillon Boiler Works, Fitchburg, Mass., to become associated with Spencer Trask & Co., in its Worcester, Mass., office.

* * *

William G. Clyde, vice president and general manager of sales of the Carnegie Steel Co., Pittsburgh, was elected director of the Bank of Pittsburgh, National association, at the annual meeting of the stockholders Jan. 8.

* * *

B. J. Doyle, recently connected with the Belding Foundry Co., Belding, Mich., maker of charcoal iron castings, was formerly connected with the Detroit Stoker Co. Mr. Doyle is representing the Belding company in Detroit.

* * *

James W. Hook, formerly president of the Allied Machinery Co. of America, has been elected president and treasurer of the Geometric Tool Co. of New Haven, to succeed the late Howard E. Adt.

* * *

Alexander Forward, recently appointed secretary and manager of the American Gas association, 342 Madison avenue, New York, was formerly member of the State Corporation commission of Virginia. He succeeds Col. Oscar H. Fogg in his new position.

* * *

A. Leon Scott for four years associated with the Worcester, Mass., plant of the Arcade Malleable Iron Co. has been appointed general sales manager for both the Worcester, Mass., and Springfield, Mass., plants of the company.

* * *

Maurice B. Dean has resigned as secretary of the American Manufacturers Export association, to devote his time to the Direct Coupon Corp. of which he is president and the Jones Bros. Tea Co., Inc., of which he is general counsel and director.

* * *

LeGrand Parish, who has been president of Lima Locomotive Works, Inc., Lima, O., since 1918, has resigned to devote his entire attention to American Arch Co., Inc., of which he is also president. He will remain on the executive committee of the former company.

* * *

Oswald Fowler has been admitted into full partnership in the firm of Rogers, Brown & Co. as one of the

A. F. HARVEY
Recently elected president, Pittsburgh Steamship Co., as announced in IRON TRADE REVIEW Jan. 10

New York partners. Mr. Fowler, who is a brother of Arthur A. Fowler of Rogers, Brown & Co., has been with the company for several years as head of its foreign department.

* * *

Jonathan Warner, president of the Trumbull Steel Co., Warren, O., has been elected a director of the American Iron and Steel institute. He fills the vacancy created by the death of Willis McCook of the Pittsburgh Steel Co. Mr. Warner's term will expire in May, 1926.

* * *

Clarence M. Ballou, for more than seven years manager of the Cleveland office of the American Sheet & Tin Plate Co. has been selected as traction commissioner in the new Cleveland city manager cabinet. Before coming to Cleveland he was connected in steel management in Monessen, Pa.

* * *

R. C. Murphy, who recently joined the Fairmount Tool & Forging Co., Cleveland, manufacturer of mechanics' and motorists' tools, was formerly connected with Smith & Hemenway Co., Irvington, N. J. Previous to his connection with the latter company he was in the employ of Peck, Stow & Wilcox Co., Southington, Conn.

* * *

James Hartness, president, Jones & Lamson Machine Co., Springfield, Vt., was elected president of the American Engineering council of the Federated American Engineering societies at its recent annual meeting at Washington. He succeeds Dean Mortimer E. Cooley, University of Michigan, who has retired after two years of service.

* * *

David A. Buckley, Jr., of New York, has been elected secretary and a member of the board of directors of W. A. Ives Mfg. Co., Wallingford, Conn., machinist and founder. A. C. Smith, formerly foreign sales manager, will be in charge of the new branch to be opened in Houdan, France, for the manufacture of bits and augers.

* * *

Joseph B. Deisher, for 14 years connected with the T. H. Symington Co., Rochester, N. Y., has resigned from that company to become assistant superintendent of the American Malleable Castings association, as field representative. He will be located at the Consulting Engineer's office, Albany, N. Y. Mr. Deisher has made a study of the application of powdered coal to malleable iron melting.

* * *

Alexander McIver, recently made supervisor of heavy traction development of the Westinghouse Electric & Mfg. Co., was first connected with that company in 1909. He was graduated from University of North Carolina with the degree bachelor of arts, and from the electrical engineering course at Johns Hopkins university. Mr. McIver was resident engineer for the electrification of the Norfolk & Western and Chicago, Milwaukee & St. Paul railroads.

* * *

Henry M. O'Bleness of Philadelphia, assistant to the president of Midvale Steel & Ordnance Co., the Cambria Steel Co. prior to the sale of the properties of these companies to Bethlehem Steel Co., has been elected vice president of the Central Industrial Service Co., 852-856 Frick building annex, Pittsburgh, and will engage actively in the management of the business of that company. Prior to locating in Philadelphia four years ago, Mr. O'Bleness had been for several years with Carnegie Steel Co. in its executive department.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCORPORATION of the Holland Mfg. Co., Holland, Mich., was effected recently for the manufacture of wrecking cranes for use in garages and also garage presses. Other garage equipment and automotive accessories may be manufactured later. No plant is contemplated at present, the company now operating in leased quarters. The Holland company will require metalworking machinery such as drills, power saws, lathes, etc., to place its operations on a high level. S. R. McLean, purchasing agent and local manager of the Holland-St. Louis Sugar Co., is president of the new company; Theodore Erickson, formerly with Erickson & Olmstead, Charlevoix, Mich., is vice president and C. J. McLean, plant superintendent for the Holland-St. Louis Sugar Co., is secretary and treasurer.

* * *

THE Rockford Stove Works, Rockford, Tenn., is making arrangements to increase its plant through the addition of a department to make hot blast heaters and nickel castings. Harry Howard is manager of the plant.

* * *

WILLIAM HENDRIE, Hamilton, Ont., recently was elected president of the Hamilton Bridge Works Co., that city. He succeeds his brother Sir John Hendrie who died recently. W. T. S. Hendrie, son of Sir John Hendrie was elected vice president. W. E. Phin and W. H. Owens, were elected directors.

* * *

A THREE-STORY plant, 92 x 100 feet is being constructed by the Swords Electric Co., 625-9 Seventh street, Rockford, Ill., manufacturer and dealer in electrical supplies. The company was incorporated recently to take over the electrical supply business formerly conducted under the name of Swords Bros. Co.

* * *

THE Western Iron & Steel Co., Detroit, has been formed to produce gray iron castings and malleable iron. Montgomery Whaling of 3044 West Grand boulevard is one of the incorporators of the company which has a capital of $150,000 and 12,000 shares of no par stock. Other incorporators are C. R. Talbot and Max Kahn, both of Detroit. The company recently purchased the property of the Vassar Castings Co., Vassar, Mich. Much of the equipment now in the present plant is being scrapped and the new and latest machinery for the production of castings is to be installed. A new building is to be erected also.

* * *

A NEW electrochemical plant has just been completed at Twelfth and Raspberry streets, Erie, Pa, by the Carbo-Oxygen Co., Pittsburgh, for the manufacture of gases used in welding and cutting. C. J. Trees is president, J. R. Rose, vice president, John Harris, second vice president and William Provost, secretary and treasurer. W. F. Gallagher is in charge of the Erie plant.

* * *

THE New England High Carbon Wire Co., Worcester, Mass., recently incorporated with $50,000 capital to manufacture metal products, plans to begin operation shortly in the former plant of the Millbury Rubber Co. Carl Thure Lund, formerly a foreman for the American Steel & Wire Co., Worcester, is president and general manager of the new company.

* * *

COMBINATION kick plates and safety lights in addition to other automobile accessories are manufactured by the Liberty Products Mfg. Co., 224 North Sheldon street, Chicago, recently incorporated for $30,000. J. Rene Ayotte is president and head engineer of the new company; Leo J. Biron is secretary and general manager, while Anna C. Offerman is treasurer and purchasing agent.

* * *

LITTLE new equipment will be needed at the present time by the Colonial Tool & Forge Co., recently moved to Elkton, Md., from Columbiana, O. A small addition to the plant is under construction. Officers are: L. V. Blue, president, Elkton, Md.; M. L. Dennis, vice president, Pittsburgh, and Gilman Spencer, secretary and treasurer, Philadelphia. The company manufactures mechanics' tools, screw drivers, etc.

* * *

OPERATIONS are being carried on in a leased building by Whyte Motor Products Co., Muskegon, Mich., manufacturer of a patent motor control and steering gear. It is consolidating its two plants at Muskegon. Few purchases of additional machinery or equipment will be made at this time. L. T. Jamme is president, John White, vice president; C. E. Mitchell, secretary and treasurer and Joseph A. Jones, general sales manager.

* * *

SEVERAL factory buildings were recently purchased at La Crosse, Wis., by the Milwaukee Corrugating Co., Milwaukee, manufacturer of sheet metal products. Operations in these are expected to begin March 1. Three of the buildings will be remodeled before production is started. The Milwaukee company now operates branches at Kansas City, La Crosse and Minneapolis. Louis Kuehn is president. Frank Vyvyan will assume charge of the La Crosse plant Feb. 1.

* * *

UNFILLED orders at the close of the year are reported by The Wellman-Seaver-Morgan Co., Cleveland, as being over $1,500,000. In this are included two ore unloaders of the largest existing size at Conneaut, O., for the Pittsburgh Steamship Co. A large order of cranes was taken from the United States government for shipment to the Philippine Islands. Four orders are on hand for the latest type of gas producer brought out last year with twice the capacity of former size. Thirty of these now have been sold. A large inquiry for new style car dumpers is reported as recently having come out. Two of these are now in operation.

* * *

W. W. SLY MFG. CO., Cleveland, manufacturer of sand blast machinery, foundry equipment, etc., recently announced several changes in personnel. Ralph O. Mullen, formerly connected with the home office, has been made assistant to C. P. Guion, manager of the Chicago branch at 343 South Dearborn street. E. T. Williams has been added to the sales force in the Cleveland district. D. P. Carter, eastern district manager with headquarters in New York, will be assisted now by H. P. Furlong. H. R. Atwater, formerly with the Osborne Mfg. Co., Cleveland, now represents the Sly company on the Pacific coast, with offices at 1407 De-

troit street, Hollywood, Cal. P. H. McArdle Equipment Co., New Orleans, will handle the Sly products in the gulf region.

* * *

GEORGE F. Marchant Co., Chicago, manufacturer of rivet sets, shear blades, punches and dies, chisel blanks and similar products, has just enlarged its floor space by 12,000 square feet.

* * *

THE Chicago Steel Castings Co., Chicago, recently incorporated for $1,500,000, was formerly known as the Chicago Malleable Castings Co. The company operates a plant.

* * *

DWIGHT P. ROBINSON & CO., INC., has been authorized to design and construct extensive additions to the shops of the Southern railway at Birmingham, Ala. The work includes locomotive repair shops, boiler and smith shop, car repair sheds, mill shop, power plant and other buildings.

* * *

CONSTRUCTION of a plant for the manufacture of oxygen will be started immediately at Knoxsville, Tenn., by Burdett Oxygen Co., St. Johns court at Fulton street, Chicago, manufacturer of electrolytic oxygen and hydrogen. A 1-acre plot has been purchased in the industrial section as site for the new plant.

* * *

NEW equipment will be purchased probably for the plant of the Warmack-Williams Stove Co., 1601 North Sixth street, Fort Smith, Ark. The company recently was incorporated for $30,000 to manufacture gas stoves and ranges. George Warmack is president, George H. Williams, vice president; Hill Williams, secretary and treasurer and John Warmack, general manager.

The same men hold the same offices in the recently incorporated Fort Smith Stove & Foundry Co., South Fort Smith, Ark. This company has a capitalization of $30,000 and will manufacture wood and coal stoves and also will conduct a general foundry business.

* * *

H K. FERGUSON CO., Cleveland, engineer and builder, has been made engineer and architect for Ohio Wesleyan university, Delaware, O. A program of extensive building has been planned comprising approximately 10 or 12 structures to be erected within the next six or eight years.

* * *

KAWNEER MFG. CO., Niles, Mich., manufacturer of brass, bronze, steel and copper moldings, etc., has let contract to Robert L. Reisinger Co., 454 Oakland avenue, Milwaukee, for constructing three buildings. One will be 47 x 133 feet, another 43 x 180 feet with a 48 x 60-foot wing, and a 2-story warehouse, 106 x 212 feet will also be built.

* * *

CONSTRUCTION of a modern 50 x 180-foot warehouse and general office building was started Dec. 17 by the Kilgore Mfg. Co., Westerville, O., manufacturers of toy pistols, caps and novelties to replace that recently damaged by fire. All the machinery in the nickeling plant has been installed. Orders for equipment were placed immediately after the fire. Full operations have been resumed.

* * *

MANUFACTURE of automotive electrical service parts will be undertaken by C. E. Niehoff & Co., 145-9 West Ohio street, Chicago. The company will manufacture electrical shop equipment in addition to the automotive products. The Niehoff company was incorporated recently for $500 with Conrad E. Niehoff as president and M. A. Niehoff as secretary and treasurer.

* * *

FABRICATING capacity of the Milwaukee Structural Steel Co., Milwaukee, will be increased about April 1 when the company expects to complete a new plant at State and Fortieth streets, Wauwatosa. The present shop is in leased quarters at St. Paul avenue and Ninefeenth street, Milwaukee. The new building will be 125 x 300 feet. John F. Henry is head of the company which has grown from a small shop established about 10 years ago.

* * *

A WAREHOUSE for the Hammond-Byrd Warehouse Co., Thirty-seventh and Loomis streets, central manufacturing district, Chicago, is being constructed. The building will also be used by the Hammond-Byrd Iron Co. with general offices at Birmingham, Ala. One structure will be 2-story, 40 x 60 feet, and the other 2-story, 100 x 100 feet. A complete line of soil pipe and fittings, plumbers' cast iron specials, etc., will be handled in the new warehouse.

* * *

CONSTRUCTION of a 1-story building has been started by Pyrene Mfg. Co., 520 Belmont avenue, Newark, N. J. The new plant will be of concrete and hollow tile, 100 x 310 feet. It will have separate power house, oil burners, etc. Enough land has been acquired to more than double the building now being erected. The new building will be the second devoted to the manufacture of anti-skid chains, cross chains and lever locks. Equipment requirements for the building practically all have been placed. Walter Bauer is president, Edward J. Waring vice president and general manager and Edward A. Clapp secretary and treasurer.

* * *

PERSONNEL changes made by the United States Cast Iron Pipe & Foundry Co., Burlington, N. J., at the new year consisted in the following appointments: M. A. Hoffer, eastern sales manager with headquarters at Morris building, 1421 Chestnut street, Philadelphia, Pa.; G. T. Overholt, acting New York sales agent with offices at 71 Broadway, New York, and Thomas Simons, Kansas City sales agent with headquarters at Interstate building, Kansas City, Mo.

* * *

CONSTRUCTION work has started on a $3,000,000 dam and power house at Cat Calumet Island Falls on the Ottawa river near Bryson, Que., for the Ottawa River Power Co., Ltd., Montreal, Que. The contract for generators has been awarded to Canadian Westinghouse Co., Ltd., Montreal, at a cost of $250,000. Dr. L. A. Herdt, owners' staff, is receiving bids on the remainder of electrical machinery and equipment required. General contractor is Fraser Brace, Ltd., Montreal; engineer, Wm. Kennedy & Sons, Ltd., 232 St. James street, Montreal, and Dr. L. A. Herdt.

* * *

ANNOUNCEMENT is made by the National Malleable Castings Co., Cleveland, that the newly incorporated National Malleable & Steel Castings Co. has been organized to acquire the assets and continue the business of the former company. Beginning as of Jan. 1 the National Malleable & Steel Castings Co. will be owner of plants and properties previously owned by the National Malleable company and all contracts, accounts and settlements should be made with the Malleable & Steel company. No change in management has taken place in the change.

* * *

C B. ADAMS and S. P. Holmes, recently incorporated under the name C. B. Adams & Co., will represent the Union Iron Works, Erie, Pa., manufacturer of steel water tube and fire tube boilers; the Erie Engine Works, Erie, Pa., manufacturer of slide valve engines and the Sims Co., Erie, Pa., manufacturer of water heating apparatus. The new company will have offices in the London Guarantee building, 360 North Michigan avenue, Chicago.

Investigation of

St. Lawrence Waterway Asked by American Engineering Council

James Hartness, former governor of Vermont, and past president of the American Society of Mechanical Engineers was elected president of the American Engineering council to succeed Dean Mortimer E. Cooley of the University of Michigan at the annual meeting held in Washington, Jan. 10-11. Addressing the council, President Hartness declared that his administration would be characterized by effort to aid, through the engineering profession, the American people in making the best of the nation's energies and resources. Vice presidents elected were L. P. Alford, New York, and Charles R. Gow, Boston.

A notable event of the meeting was the annual dinner on the evening of Jan. 10 at the Chevy Chase club. Secretary Hoover, President Nicholas Murray Butler of Columbia university, Assistant Secretary Dwight F. Davis of the war department, President Hartness of the council, and the Italian Ambassador, Don Gelasio Benedetto Anatolio Caetani were speakers.

Both Secretary Hoover and Doctor Butler emphasized the need of broader engineering education and of greater engineering participation in the social, economic and political life of the country. The ambassador outlined a plan by which young graduates of Italian technical schools will be brought to America and provided employment in the industries. Assistant Secretary Davis described the industrial mobilization plans of the war department. He appealed for the cooperation of the engineer, which was unanimously tendered at a business session of the council. Dean Cooley presided at the dinner, reviewing, in a brief address, the achievements of the council.

The Great Lakes-St. Lawrence river project was discussed at length at the business sessions, the following resolution being adopted:

"That it is the sense of the American Engineering council, in view of the magnitude of the project for improving the St. Lawrence waterway and the great amount of public interest that has been manifested in it, that a full and complete engineering investigation of the project, participated in by civilian engineers of both governments affected, should be made to determine the facts with respect to navigation, power, alternate routes and any other relative matters which may be involved."

Indorsing the recommendation of its executive board, the council passed a resolution urging that sanitary engineers in the United States public health service be made commissioned officers. The committee on storage of coal reported informally that the complete findings of the committee would be made public next month. In his farewell address, Dean Cooley said that progress of industry and social well being were so intimately bound up with engineering that this profession could no longer be held back. Executive Secretary Wallace said that the council has been growing in public confidence and that its opportunities were great. "It is my conviction," he said, "that the public is in the frame of mind to accept the leadership of the engineering profession and that it has been gratified to note evidences of an inclination on the part of the profession to assert a certain degree of leadership."

Following the meeting President Hartness held conferences with officers and members of the council at which an active program for 1924 was mapped out. Foremost among the activities will be the direction of the public works enterprise and the development of closer working contacts with the member societies.

Install Motor in India

Tata Steel & Iron Co., India, is installing at Jamshedpur a 6300 horsepower motor, built by the General Electric Co. It will be used to drive a combination rail and structural mill which the Tata company will operate. The mill motor has a capacity equal to turning out 200 tons of rails per hour.

Obituaries

WILLIAM HOPPES, aged 57, head of the research and technical department of the Aluminum Co. of America, Pittsburgh, died Jan. 9 in that city. The introduction of aluminum for electrical purposes, particularly for high voltage transmission, is credited to the efforts of Mr. Hoopes. He placed in successful operation many chemical and metallurgical operations which caused him to be recognized everywhere as an authority in aluminum metallurgy.

Mr. Hoopes was born in West Chester, Pa., and was educated in the public schools of West Chester and Philadelphia. Later he was graduated from the school of electrical engineering at Lehigh university. For 10 years after he left the university he was engaged in the construction of electric railways. He then came to Pittsburgh and joined the staff of the Westinghouse Electric & Mfg. Co. He became chief electrical engineer of the Aluminum company in 1900 and has been head of the research technical departments for the last seven years.

* * *

R. T. Robinson, formerly secretary and director of the J. I. Case Threshing Machine Co., Racine, Wis., died, Jan. 10, at the age of 60 years.

* * *

Adelbert B. Case, for many years identified with the Blair Mfg. Co., Springfield, Mass., manufacturer of lawn mowers, died in that city, Jan. 5, aged 71. Mr. Case was president of the Blair company and had other business interests.

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Herbert E. Cushman, treasurer and general manager of Morse Twist Drill & Machine Co., New Bedford, Mass., died Dec. 27, at the age of 61 years. His first experience in the metalworking industries was as clerk with the Taunton Locomotive Works.

* * *

William Herbert Gates, vice president and superintendent of the Eastern Machine Screw Corp., New Haven, Conn., died Dec. 29. He was one of the leading authorities of the country on automatic screw machines, having invented his first machine at the age of 22 years.

* * *

Thomas K. Lent, foundry superintendent for the William M. Crane Co., Jersey City, N. J., died recently at his home in Peekskill, N. Y., at the age of 59 years. Mr. Lent had been identified with one interest for more than 44 years, becoming associated in 1879 with the Peekskill Stove Works, which in 1898 was purchased by the Crane company. He was born in Brooklyn. Mr. Lent's successor has not as yet been appointed.

* * *

Wladimir M. Rogovine, aged 51, sales agent of the American Steel Foundries, New York, died suddenly Jan. 11, at his home in New York of arteriosclerosis. He had been connected with the American Steel Foundries for 13 years. The elder son of M. A. Rogovine, famous Russian engineer and the nephew of a noted governor general of Vilna, Mr. Rogovine's early life was spent in the Russian diplomatic service. He came to the United States on a visit about 20 years ago and decided to enter business here. He was a member of the New York, Lotos, Railroad and other clubs.

Conference Board Works Out Safety Plan

New York, Jan. 15.—Practical operation of a nationwide plan designed to reduce accidents to workers in all lines of American industry is announced by the National Industrial Conference board. The board has been working for two years in connection with the American Engineering Standards committee, the New York department of labor, and other agencies. The plan, which is to be adopted by leading manufacturing associations and other private and official agencies, resulted from the revelation that deaths and mishaps to workers have shown no appreciable decrease during the past few years, while the money loss through idleness, medical treatment and insurance has risen from a quarter of a billion dollars annually to an estimated total for the present year of more than a billion dollars, a tremendous burden on industry.

Magnus W. Alexander, managing director of the board, serving through the safety code correlating committee of the American Engineering Standards committee, has transmitted to the leading manufacturers of the country the new plan for accident prevention based on a series of 38 safety codes, being worked out by experts representing all groups interested in or affected by the application of each code.

Eight of these have already been completed, and they are now supplanting the various incomplete regulations, which differ in many states, and which are blamed by government research experts of the department of labor for many of the industrial accidents which are preventable. When all the codes are in operation, discrepancies in different states and in different industries will have been superseded by the best factory practice, and the workers protected to the fullest possible degree. Indorsement of the plan has been given by the state of New York, through the New York bureau of industrial codes and other officials.

Quoting a research report just announced by the United States department of labor, the board summarizes the number and cost of industrial accidents likely to occur in 1924 as follows:

	No. of accidents	Working days lost	Wage loss, at $4.50 a day
Deaths.....	21,232	127,392,000	$573,264,000
Permanent total disability .	1,728	10,368,000	46,656,000
Permanent partial disability .	105,629	51,494,357	231,724,607
Temporary . total disability .	2,324,829	37,915,613	170,620,259
Total	2,453,418	227,169,970	$1,022,264,866

Offers Third Trophy in Safety Campaign

CARRYING out the plan of the last two years in placing its safety work on a competitive basis among its 18 plants, the Cargegie Steel Co., Pittsburgh, has had designed and cast another bronze trophy for the year 1924. As in the competition last year, the trophy is to be awardeded from month to month and at the end of the year is to be retained by the plant holding the best record. The monthly award is based on the greatest percentage of decrease in lost time accidents at any plant as compared with the same month for the preceding five years, and the award at the end of the year is based on the greatest decrease throughout the 12 months compared with the preceding five years.

The trophy for 1924 was designed by Guiseppe Moretti, a sculptor residing in Pittsburgh, who designed the two preceding trophies. Mr. Moretti has become interested in safety through this line of work and is continually studying it from a practical as well as the symbolic viewpoint. The trophy stands 33 inches high; 10 inches wide at the base and on the reverse side bears the words in relief, "Carnegie Steel Company Safety Trophy 1924."

In his story of the composition Mr. Moretti declares that machinery is an unwieldy, destructive power subject to the control of man. This power is a force that exists to a degree in all tools and equipment, whether the simplest implements of primitive labor, the horses and cattle of the ranch, the elaborate equipment of the scientific laboratory, or the vast, awe inspiring machinery of the modern industrial world. "Safety First" is an intellectual power introduced into the world since machinery began to be employed to increase production. This intellectual power always has existed in the form of instinctive self-preservation.

SAFETY TROPHY TO BE COMPETED FOR BY 18 PLANTS OF CARNEGIE STEEL CO.

Under former simple conditions it could be trusted vaguely as an instinct. With the late rapid development of machinery, man becomes confused before vast new forces of inanimate power and intricate dangers of science. These forces demand quicker reactions and firmer precautions against danger than man's ancestors required. To answer this demand the latent, almost unused, instinct of man called self-preservation has been organized into an invincible force under the slogan, "Safety First."

"Safety First" as a recognized intellectual being is therefore quite young. His strength though absolutely without limit in its possibilities is still in its youth. "Human labor," the third force is an older, ever existing power in its full strength but ever young. Mr. Moretti has developed these facts in his 1924 safety trophy for the Carnegie Steel Co.

A powerful young horse stands firmly, as if held by a strong hand, full of energy and impatience, ready to do the will of his master. On his neck is no bridle, but with the firm control of a perfect will. The rider carries no weapon for he is a constructive power for life and health. On his banner is 1924. His shield is "Safety First." Standing on the pedestal below at his side is a large strong young workman—"Human Power." The three, in a beautiful coordination are a group, each giving and receiving strength as in a circle of perfect harmony. Human Power, with his hammer resting, looks up at the banner and meditates before he begins work.

Wage Status Analyzed by Board

Industrial Conference Observers Report Average of Weekly Earnings in All Lines Advanced 8.2 Per Cent in 1923—Offset by Increase in Living Cost, Net Gain Was 3.9 Per Cent in Favor of Workers

AMERICAN industry begins the new year with wages close to the peak point of 1920, according to a review of industrial and employment activities issued by the National Industrial Conference board, New York. While wages were rising steadily from January, 1923, last up to November, the latest time when detailed information was available, the cost of living, the board reveals, likewise was advancing, but the advance in wages was enough to more than offset the rise in household and other expenses of the average American family.

Therefore, the board announces, the actual increase of wages, balanced with the slightly decreased purchasing power of the dollar during the year, as caused by the rising cost of living, has brought to the worker in industry a 1923 rise of 3.9 per cent in his weekly wage, and of 8.5 per cent in his hourly earnings.

Summarizing the industrial activity of the year, the board finds that 1923 was marked by a general upward movement in wages, with a widespread tendency to increase wage rates, combined with close to capacity production in many industries. The midsummer slackening of production, the board points out, was followed by a certain amount of curtailment in employment, but wages have so far suffered little reduction on this account.

Most of the wage increases were in the nature of compensation for the reductions which occurred in 1921 and tended to bring the earnings of these workers closer to the level of those in the highly unionized industries which had successfully combated any reduction and had maintained high wages throughout the period of industrial depression.

The board states:

"The latest figures available are for October, but results for the last two months of the year will probably not differ greatly from the October figures. Between January and October, 1923 average hourly earnings increased from 50.1 cents to 56 cents, a gain of 11.8 per cent, while average weekly earnings made a gain of 8.2 per cent from $25.08 to $27.14. During the year employment increased as high as 4.1 per cent above the figures for January, but by October the January level was again reached.

An increase of 3.8 per cent in the cost of living during the first ten months of the year, when weighted with the statistical increase in weekly earnings of 8.2 per cent, brought about an actual increase of 3.9 per cent, and 8.5 per cent in real hourly earnings. Thus the wage-earner was considerably better off at the close of 1923 than he was at the beginning of the year."

The advance in the cost of living between September and October was enough to offset the slight advance in average hourly earnings in that month, with the result that "real" hourly earnings, or the purchasing value of money earnings, remained unchanged at a point 40 per cent higher than in July, 1914. The sharp increase in weekly earnings advanced "real" weekly earnings to a point 32 per cent above July, 1914 as compared with 30 per cent in September.

A slight increase in the latest figures of total employment is insufficient to indicate any well-defined upward trend. In 13 industries employment increased, in nine it declined and in one industry it remained practically unchanged. The average week per wage earner increased from 47.7 hours in September to 48 hours in October and the nominal week advanced from 49.5 hours to 49.6 hours. The average week of plant operation declined slightly from 49.5 hours to 49.3 hours.

During 1923 the board finds that the cost of living has shown a definite tendency to advance, even though the movement has not been consistently upward. Fluctuations from month to month have been largely seasonal, however, and in November, 1923, prices of those goods and services which enter into the consumption of families of small and moderate means averaged 4.4 per cent higher than they were a year ago. In November, 1923, the cost of living was 65.3 per cent above the July, 1914 level but had declined 19.2 per cent from the peak of high prices reached in July, 1920. This is the highest point reached by the cost of living since May, 1921.

Davis Immigration Plan Is Considered

Washington, Jan. 15.—Public hearings on a large number of immigration bills now before congress will be closed soon by the house immigration committee and the committee will go into executive session.

Secretary of Labor Davis has sent to the senate and house committees a new bill. This provides for selection of immigrants abroad, for extension of the quota restriction to all countries in the western hemisphere and for various modifications of the present entry requirements. A prospective immigrant would be required to obtain from an American consular office abroad an immigration certificate based upon the results of an examination. In times of industrial depression the secretary of labor would be authorized to suspend all immigration.

The bill would call for suspension of quota limitations by the issuance of special immigration certificates to two special classes. One of these classes would include "farmers and skilled or unskilled labor when labor of the like kind cannot be found unemployed in the United States, providing that no strike or lockout exists or impends in the industry seeking to import such labor." The other specially admitted class would be composed of husbands, wives and minor children dependent upon relatives who already are citizens of the United States.

Detroit Employment Gains

Detroit, Jan. 15.—Employment in local plants increased 14,293 in the first week of the new year, according to announcement of the employers' association. The total now employed in plants reporting to the association is 214,283. The month of December showed a gain of 1886 over November, the report states.

Sales of Quartz Decrease

Sales of quartz from pegmatite, dikes, veins, quartzite in 1922 showed a decrease of 5 per cent in quantity in comparison with 1921, according the United States geological survey. The prices on crude quartz in 1922 ranged from $2 to $6.88 a ton and averaged $4.54. Prices of ground quartz ranged from $13.71 to $40.31 and averaged $14.05. Production was reported from California, Connecticut, Maryland, New York, Pennsylvania and Wisconsin. The bureau of foreign and domestic commerce records imports of "flint, flints, and flint stones, unground," from several countries. These imports are partly flint pebbles for use in grinding mills, and partly for other uses. The figures cannot be separated accurately.

Tool Buying Improves Slightly

Orders Heavier in Most Quarters and Inquiries Coming Out in Good Volume —Used Machinery Dealers Encouraged by Market Activity—Contractors Figuring on Crane Needs

BUYING of machine tools and shop equipment continues to show improvement in practically all districts and inquiries continue to be sent out in good volume from diversified industries. Featuring inquiries this week is one from the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for 50 machines.

The Crosley Radio Corp., Cincinnati, is expected to bring out a list shortly while the Pennsylvania railroad and the Standard Sanitary Mfg. Co., may close soon. The New York Central has been adding a few tools to the list brought out in December. The Southern railroad is figuring on equipment for a new plant at Birmingham, the machines to be purchased through the Washington office. A list is expected soon from the Interborough Rapid Transit Co., New York.

Included in the companies buying equipment are the General Electric Co., the New York Central, the Central Tube Co., Economy, Pa., the Hudson Motor Car Co., Detroit, the Standard Oil Co., Whiting, Ind., the Chicago board of education, the Llewellyn Iron Works, Los Angeles, the National Pump Co., Provo, Utah, W. S. Ray Mfg. Co., San Francisco, the Pelton Water Wheel Co., San Francisco and the San Francisco board of education. The Ford Motor Co. continues to add interest to the Detroit market, and is expected soon to be in need of equipment for a contemplated forging plant.

Business in used machinery is especially active with inquiries heavy. Contractors are beginning to figure on the crane equipment that will be needed for next season, and this should materialize into orders for locomotive cranes in the near future. Better buying of locomotive cranes now is apparent.

Westinghouse Brings Out List of 50 Items

NEW YORK, Jan. 15.—Although orders are coming through slowly, prospects for an early improvement in business in the local machine tool market are encouraging. Inquiries include a large number of machines, now tentatively figured, for a new plant in Birmingham, Ala., for the Southern railroad, which, incidentally, is reported as recently having closed on approximately 20 machines for other projects. The new list will be purchased through the Southern railroad's offices in Washington, D. C. The proposed plant includes a locomotive repair shop, with 25 pits, and a freight car repair shop. Dwight P. Robinson & Co., Inc., 61 Broadway, New York, engineers in charge, will commence work immediately.

A list also is expected to be brought out shortly by the Interborough Rapid Transit Co., 165 Broadway, for equipping an addition to its repair shop at Lennox avenue and 148th street.

Current business includes the purchase of an upright drill, a radial drill and a 2500-pound steam hammer for the New York Central. Locomotive crane inquiry has improved, although orders are still coming through slowly. The overhead crane market is rather featureless.

Buyers Delay Closing

CLEVELAND, Jan. 15.—Buyers of machinery and shop equipment are delaying the closing of orders for lists of equipment now before the market. Dealers continue to make some sales but the bulk of equipment being sold is confined to single tools. Inquiries, however, are heavy and dealers feel that good business is in store for the near future. Automotive manufacturers are not buying heavily.

No action is reported on the list from the National Carbon Co. The New York Central continues to send out an inquiry for a tool now and then, quotations on a lathe being asked last week. This same interest purchased four tools from a local dealer recently. The Hudson Motor Car Co., Detroit, has purchased four turret lathes from a local manufacturer. The same company reports the sale of single lathes to manufacturers in the Detroit district and also in New England territory.

Business is good in the used machinery market. Dealers report a continuation of sales which started in December and in a majority of cases they feel that 1924 is going to be a good year in this market. On the strength of this belief, many have purchased heavy stocks of good used tools. One dealer reports the sale of two radial drills, one shaper, three presses, a vertical miller, a heating furnace and numerous small tools during the week.

Good Business Placed

CHICAGO, Jan. 15.—Considerable business in machine tools has been placed here in the past week. A local interest has purchased 35 punch presses from one machinery house and 75 spindles of sensitive drills from another. A Chicago manufacturer has placed an order for a senstive radial drill, a lathe, a heavy-duty drill and a drill grinder. It develops that a western railroad recently purchased three axle lathes. An eastern carrier is expected to buy three of this type shortly. The Standard Oil Co. has purchased some equipment for its recently damaged shops at Whiting, Ind. A local machinery house has closed on an 84-inch boring mill and an 84-inch x 18-foot reversible motor-driven planer. Activity in planers has been marked.

Inquiry still is active. Machinery dealers expect good railroad buying will come this year, partially because of the upholding of the recaptured-earnings clause of the transportation act. One railroad entering Chicago needs to replace about 70 per cent of its tools and may do this in order to retain its excess earnings.

The board of education has awarded the following equipment for the Tilden technical high school: Ten lathes and one crank shaper, all motor-driven, to the Stocker-Rumely-Wachs Co.; one milling machine, to the Marshall & Huschart Machinery Co.; and four band saws to the Oliver Machinery Co.

Large List Out

PITTSBURGH, Jan. 15.—Issuance of its large quarterly list involving more than 50 machine tools for east Pittsburgh and smaller lists for its various service stations at Detroit,

Cleveland, New York, Brooklyn, Denver, Los Angeles, and elsewhere by the Westinghouse Electric & Mfg. Co., is the feature of this week's equipment market. This list includes practically all kinds of tools, such as lathes, milling machines, riddles, drill presses, boring mills, grinders, riveting machines, hammers, presses, etc. Numerous other lists are before the trade, some old ones carried over from last year including the Pennsylvania railroad and the Standard Sanitary Mfg. Co. on which tabulations are about completed. Action probably will be taken on these within the next two weeks. Numerous single tool inquiries are being closed every few days by different dealers here.

The New York Central has placed six individual tool orders at Cleveland for machines. Pipe cutting machinery, etc., ordered last fall is to be delivered shortly to the Central Tube Co., Economy, Pa., which is expanding.

Locomotive crane builders are interested in the probable requirements next spring and summer of road contractors. Many of these do not have proper locomotive crane equipment and some orders undoubtedly will be placed. The Jones & Laughlin Steel Corp. put an inquiry some time ago for a wide gage electric crane and evidently contemplates buying dock equipment of this character. Other cranes are to be bought for its South Side works, and the Carnegie Steel Co. is figuring on various types of cranes including a dock crane.

Sale Brings High Prices

BOSTON, Jan. 15.—The expected January buying movement in machine tools still holds off. The General Electric Co. has been picking up an occasional tool for its Lynn, Mass., plant against the list which came out in December. A Maine textile mill bought a 50-inch lathe and a planer. Several general machine shops bought individual tools. A Rhode Island specialty manufacturer bought four drills and a light lathe. New inquiry shows moderate improvement.

Prices continue unchanged despite the reduction announced by one manufacturer just after the first of the year. During the past week a lathe manufacturer advanced prices about 10 per cent.

Coast Market Slack

SAN FRANCISCO, Jan. 11.—Machine tool and equipment dealers in this district report a falling off in both sales and inquiries during the past few weeks, attributed to the holiday and inventory season. The past year, as a whole, showed a decided improvement both in number and volume of sales. New equipment dealers are much encouraged over the fact that the best of the second hand equipment on the coast has been absorbed.

Prospects for a good year in 1924 in the machine tool market are bright. It is anticipated that the railroads in this section will place some good sized orders during the year.

The majority of sales recently have involved single tool installations. Included among sales reported during the past few weeks were two multiple spindle drills for the National Pump Co., Provo, Utah, two 10-inch toolmakers' lathes and two 14 x 6-inch engine lathes for the San Francisco board of education and one 4-spindle high-speed drill press for the W. S. Ray Mfg. Co., San Francisco. The Pelton Water Wheel Co. purchased a horizontal drilling and milling machine. A local company has secured an order for two gear cutters for Meese & Gottfried Co. and two grinders for the board of education, San Francisco. The latter interest also awarded two 24-inch planers to the F. O. Stallman Supply Co. The General Electric Co., Oakland, purchased one motor-driven drill grinder.

December crane sales were the heaviest in the history of the Pacific coast.

Crane Awards and Inquiries of the Week

Orders Placed

One 10-ton, 79-foot span, 3-motor electric traveling crane for the American Electrical Works, Boston, to the Northern Engineering Works, Detroit. Previously repoted to unnamed bidder.

One 7½-ton, 3-motor, 37-foot span electric traveling crane for the McKay Machine Co., Pittsburgh, to the Northern Engineering Works, Detroit. Previously reported to unnamed bidder.

One 5-ton, 43-foot span electric traveling crane for the Atlantic Refining Co., Pittsburgh, to the Northern Engineering Works, Detroit. Previously reported to unnamed bidder.

Two 5-ton traveling cranes for Emsco Tool Co., Los Angeles, to Llewellyn Iron Works, Los Angeles.

One 10-ton traveling crane for Pelton Water Wheel Co., San Francisco, to Pawling & Harnischfeger, Milwaukee.

Two 5-ton traveling cranes for Southern California Edison Co., Los Angeles, to Pawling & Harnischfeger, Milwaukee.

One 10-ton traveling bucket crane for Southwestern Portland Cement Co., Los Angeles, to Pawling & Harnischfeger, Milwaukee.

Three 1-ton hand power cranes for National Ice & Cold Storage Co., San Francisco, to Stamp Electric Hoist Co., San Francisco.

Two 75-ton traveling cranes for Pitt River Plant No. 3, Pacific Gas & Electric Co., San Francisco, to Cyclops Iron Works, San Francisco.

Two 3-ton traveling cranes for Pelton Water Wheel Co., San Francisco, to Cyclops Iron Works, San Francisco.

One 2-ton traveling crane for MacDonald & Co., San Francisco, to Cyclops Iron Works, San Francisco.

One 30-ton traveling overhead crane, for Washington Iron Works, Seattle, to Pratt & Whitney Co., Hartford, Conn.

One 25-ton, 60-foot span electric traveling crane for the Lehigh Portland Cement Co., Allentown, Pa., to the Northern Engineering Works, Detroit. Previously reported to unnamed bidder.

One 5-ton I-beam crane for the Union Steel Casting Co., Pittsburgh, to the Northern Engineering Works, Detroit. Previously reported to Michigan builder.

One 30-ton locomotive crane for Interstate Iron & Steel Co., Chicago, to the Industrial Works, Bay City, Mich.

One 60-ton locomotive crane for Commonwealth Edison Co., Chicago, to the Industrial Works, Bay City, Mich.

One 40-ton and one 15-ton traveling crane for Southern California Edison Co., Los Angeles, to Pratt & Whitney Co., Hartford, Conn.

Four 5-ton and one 10-ton traveling crane for U. S. Steel Products Co., Los Angeles, to Cyclops Iron Works, San Francisco.

One 30-ton Locomotive crane for Western Pacific Co. to Industrial Works, Bay City, Mich.

Five 5-ton, 2-motor monorail hoists, one 10-ton, one 3-ton and eleven 5-ton traveling cranes for Long Bell Lumber Co., Portland, to Pawling & Harnischfeger, Milwaukee.

One 10-ton self-supporting traveling crane for Sacramento Short Line, Sacramento, Cal., to Union Machine Works.

One 30-ton locomotive crane for Merritt, Chapman Co., Los Angeles, to Brown Hoisting Machinery Co., Cleveland.

Two 7½-ton traveling cranes for Emsco Mfg. Co., Los Angeles, to Llewellyn Iron Works, Los Angeles.

One 5-ton 3-motor electric traveling crane for the St. Louis Steel Casting Co., St. Louis, to the Northern Engineering Works, Detroit.

Two 3-ton electric traveling cranes for the General Electric Co., Philadelphia plant, to the Northern Engineering Works, Detroit. These cranes are in addition to the nine recently reported, making 11 in all.

One 60-ton wrecking crane for the Commonwealth Edison Co., Chicago, to the Industrial Works, Bay City, Mich.

Two 5-ton electric cranes, 23-foot span, for the Fagan Iron Works, Jersey City, N. J., to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.

One 5-ton, 1-motor crane, 20-foot span, for Paul S. Reeves & Co., Philadelphia, to the Shepard Electric Crane & Hoist Co., Montour Falls, N. J.

One 20-ton locomotive crane for the National Lumber Creosoting Co., Texarkana, Ark., to the American Hoist & Derrick Co., St. Paul.

One used 25-ton locomotive crane for the Virginia Bridge & Iron Works, Roanoke, Va., to an unnamed seller.

One 30-ton gantry for the Lehigh Valley, awarded to unnamed builder.

Two 10-ton special handpower hoists for a New York company to the Chisholm-Moore Mfg. Co., Cleveland.

One 5-ton hand-operated crane for the Industrial Railway & Engineering Co., Greensburg, Pa., to a Michigan builder.

One 10-ton crane for the Weirton Steel Co., Steubenville, O., to the Morgan Engineering Co., Alliance, O.

One 6-ton crane for a tube manufacturer in the Pittsburgh district to a Milwaukee crane manufacturer.

Orders Pending

Two 10-ton traveling cranes for Clover Valley Lumber Co., Loyalton, Cal. Bids received.

One 10-ton traveling crane for United States engineers, San Francisco. Bids received Jan. 8.

One 20-ton locomotive crane for Service Rock Co., Fresno, Cal. Bids in.

One 15-ton yard bucket traveling crane for Pacific Portland Cement Co., San Francisco. Bids received.

One 15-ton locomotive crane for the Mahlstedt Coal & Supply Co., New Rochelle, N. Y., bids asked; another locomotive crane will be brought out by these interests later.

Recent Industrial Business Changes

THE American Manganese Steel Co., Chicago Heights, Ill., has purchased the foundry formerly operated by Queen City Foundry Co., Denver, and plans are being made to increase the capacity and revamp equipment to produce manganese steel castings. J. M. Blake, metallurgist, has been appointed general manager of the Denver foundry, and will be assisted by Kenneth Jensen, manager of sales.

* * *

The Banner-Mahoning Furnace Co., Youngstown, has taken over the Kyle's Corners plant of the Mahoning Foundry Co.

* * *

The New Haven Foundry Co., New Haven, Mich., operator of gray iron foundry, has been leased by a Rochester, N. Y., company.

* * *

Sullivan Machinery Co., Chicago, has appointed Lowell Copeland, Michigan City, Ind., as its agent in Indiana.

* * *

C. A. P. Turner Co. announces the removal of its offices from Jewelers Exchange building, 627 First avenue north, to 300 Builders Exchange building, Minneapolis.

* * *

Johns-Mansville, Co., has moved its Cleveland office to Euclid avenue opposite East Sixty-third street. The central district offices will be located there.

* * *

The Motch & Merryweather Machinery Co., Cleveland, has moved its Detroit office to the third floor of the Curtiss building, 2842 West Grand boulevard.

* * *

Smith-Wadsworth Hardware Co., East Trade street, Charlotte, N. C., has removed its business to other buildings following damage to stock and plant by fire.

* * *

Merrin Bearing Co., Chicago, has changed its name to the Merrin Motor Products Co., and has increased its capital stock from $15,000 to $25,000.

* * *

P. H. McArdle Equipment Co., New Orleans, has been appointed by W. W. Sly Mfg. Co., Cleveland, as the latter's sales representatives in the gulf region.

* * *

Frank D. Chase, Inc., engineer and architect, has moved its offices in Chicago from 645 North Michigan avenue to the new Central Life building, 720 North Michigan avenue.

* * *

Brunswick-Kroeschell Co., Chicago, manufacturer of refrigerating and ice making machinery, power and heating boilers, will move its office to its new plant at 4221 Diversey avenue, Chicago, after Feb. 1.

* * *

Armstrong Cork & Insulation Co., Pittsburgh, has moved its Minneapolis office to 316-318-320 Third avenue north, where larger quarters and increased warehousing facilities are provided.

* * *

W. P. Snyder & Co., the Shenango Furnace Co., and the Shenango Steamship Co., announce the removal of their Cleveland offices to the Union Trust building on Dec. 28.

* * *

Clement K. Quinn & Co., Duluth, moved its Cleveland sales office Jan. 1 from the Kirby building to the Union Trust building. Lee E. Ives is manager of the Cleveland office.

* * *

Charles Hardy, Inc., dealer in metals, minerals and chemicals, established its headquarters Jan. 1 in the Pershing Square building, 100 East Forty-second street, New York.

* * *

The William N. Orr Co., First National Bank building, Pittsburgh, has been appointed Pittsburgh district sales representative for the Western Cartridge Co., East Alton, Ill., producer of sheet brass.

* * *

Building Products Co., Columbus, Cleveland and Dayton, O., has purchased the plant of the Milmine Sheet & Iron Works, Toledo, O. It will manufacture metal shores for concrete structural work.

* * *

J. S. Gaffga Engine Corp., Greenport, N. Y., was incorporated recently by Nathan Goldin, president and Neville Powers, secretary and treasurer, to succeed the J. S. Gaffga & Sons, marine and stationary gasoline engine manufacturer.

* * *

F. J. Ryan & Co., Wesley building, Philadelphia, announces that all business in Pittsburgh territory will be directed from the Philadelphia office. J. L. Edwards, formerly head of the Pittsburgh office, is no longer in charge there.

* * *

Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., maker of pig iron, coal and coke, has appointed Debevoise-Anderson Co., with offices at 114 Liberty street, New York and Exchange building, Boston, as its sales agent there.

* * *

Northern Machine & Mfg. Co., Seattle, has consolidated with Harbor Brass Foundry under the name of the former. In addition to making brass, bronze and aluminum castings it will continue its blacksmith shop and acetylene welding.

* * *

Townsend Co., New Brighton, Pa., manufacturer of rivets, wire nails and wire, has moved its Chicago office to the London Guarantee & Accident building, 360 North Michigan boulevard. J. C. W. Daly is branch manager of sales for the Townsend company in the Chicago territory.

* * *

Columbia Steel & Shafting Co., Pittsburgh, has turned over its Detroit warehouse business to Edgar T. Ward's Sons Co., Newark, N. J., which will retain the plant of the Columbia company at 1400 West Fort street. Thomas H. Booth, who represented the Columbia company in that territory, will remain in charge.

* * *

R. H. Fitzsimmons and W. R. Cole, formerly of the Russell Machine Co., Pittsburgh, announce the opening of a business under the name of Fitzsimmons-Cole Machinery Co., Twenty-eighth street and Allegheny Valley railroad, that city, to deal in new and used machinery.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

When additional information is furnished accompanying items note date of issue in which previous mention was made.

CHICAGO—Arrow Head Iron Works of Chicago, 816 West Erie street, has been incorporated for $5000 to manufacture and deal in iron and steel products, by K. C. Pattison, E. P. Newkirk and C. H. Pattison.

CHICAGO—The Stuko Steel Sales & Construction Co., 1302, 105 West Monroe street, has been incorporated for $100,000 to manufacture and sell steel products, building materials, etc., by Michael F. Ryan, H. D. Bowlus and John J. Byrne.

CHICAGO—The Murdock-Lowe Equipment Co., Inc., 335, 37 West Van Buren street, has been incorporated with 500 shares no par value stock, to manufacture and deal in engineering and hardware specialties, machinery, appliances and accessories, by Irene G. Murdock, Clara Lowe and Gustave F. Lowe.

CHICAGO—Wolff Range Boiler Mfg. Co., 25[illegible] North Hoyne avenue, has been incorporated for $400,000 to manufacture, repair, buy, sell and generally deal in steel and other metal products, by Frederick W. Flott, Marvin A. Jerslid and Lawrence Beers Jones. No plant construction is contemplated for the immediate future.

CICERO, ILL.—Aztec Iron Works, 1529 South Cicero avenue, has been incorporated for $10,000 to deal in iron and steel products, by Joseph W. Cummings, Robert Chittenden and Timothy S. Kiley. No plans are being disclosed at present.

FORT WAYNE, IND.—Wabash railroad has purchased 31 city lots adjacent to its present shops, site to be used for expansion.

PADUCAH, KY.—The Shelton Bros. Foundry Co. plans 1-story foundry for manufacture of steam boat machinery, costing approximately $40,000.

BOSTON—The Gilman Mfg. Co. has been incorporated for $1,000,000 to manufacture mining machinery by George H. Gilman, Belmont, Mass.; J. Cogswell, Braintree, Mass., and Ralph E. Tibbetts, Winchester, Mass.

BOSTON—Moore, Worral & Kling has been incorporated for $25,000 to manufacture and deal in tank station equipment, by Charles W. Moore, Elmer M. Kling and Robert M. Nowen.

BOSTON—The Walworth Oregon Co. has been incorporated for $350,000 to manufacture and deal in metals, by Howard Coonley, Milton, Mass.; William P. F. Ayer, Newton, Mass., and George A. Ricker, Milton.

BOSTON—Chase & Lyman, Inc., has been incorporated for $100,000 to carry on business of constructing machinery, by Curtis D. Chase, Allson, Mass.; Charles F. Lyman Jr., Dover, Mass., and Margaret M. Dunn, Cambridge, Mass.

CAMBRIDGE, MASS.—The Automotive Signal Corp. has been incorporated for $25,000 by Fred B. Bartlett, Lexington, Mass., Olmore C. Francis, Cambridge, and Chester W. Johnson, Lexington.

MELROSE, MASS.—Reo Simpson Co. has been incorporated for $100,000 to manufacture and deal in vehicles, by Eugene P. A. Simpson, Winchester, Mass.

SOMERVILLE, MASS.—Teiner-Torngren Co., Inc. has been formed with $50,000 capital to manufacture and deal in metal products, by Arthur E. Teiner, Medford, Mass.; George C. Torngren, Everett, Mass., and Mjalmar Cederstrom, Somerville.

WORCESTER, MASS.—H. Mandell, 33 Derby street, plans 2-story, 60 x 125-foot machine repair shop on Foster street, to cost about $60,000.

ST. LOUIS—Reeves & Skinner Machinery Co. has been incorporated for $50,000 to manufacture and deal in machinery, by W. H. Reeves and R. Skinner.

CAMDEN, N. J.—The Standard Tank & Seat Co., 314 North Front street, manufacturer of plumbing supplies, has awarded contract for 3-story, 44 x 54 foot factory.

PLEASANTVILLE, N. J.—A power plant will be erected in conjunction with the new $250,000 plant here, for the Peerless Plush Mfg. Co.

BROOKLYN, N. Y.—L. & S. Iron Works has been incorporated for $5000 by S. Shankin and H. Budnick, with B. Budnick, 220 Fifth avenue, New York, as attorney.

BROOKLYN, N. Y.—Nassau Brass Foundry has been incorporated for $25,000 to make nonferrous castings, by W. C. and C. P. and C. L. McGrath, with J. Harris, 1545 Broadway, as attorney.

BUFFALO, N. Y.—Dixon-Haines has been incorporated for $200,000 to manufacture and deal in automobiles, by B. E. Dixon, R. H. Willats and C. J. Kleinfelder, with J. J. Sullivan as attorney.

CRANESVILLE, N. Y.—The Adirondacks Power & Light Co., Schenectady, N. Y., will start work shortly on the erection of a 1-story power plant, 145 x 200 feet. Including equipment, the proposed plant will cost close to $300,000.

NEW YORK—Empire Fire Proof Door Co., 35 Southern boulevard, plans $6500 addition to 2-story brick building, 435-7 Southern boulevard. Plans are drawn.

NEW YORK—E. I. S. has been incorporated for $50,000 to manufacture and deal in machinery and electrical apparatus, by H. R. Rising, C. R. Neil with R. E. Swezey, 50 Pine street, as attorney.

NEW YORK—Reed Propeller Co. has been incorporated for $200,000 to manufacture and deal in propellers, etc., by S. A. and L. G. Reed and W. Fowler, with F. Knorr, Albany, N. Y., as attorney.

NEW YORK—Blum Land Equipment Corp. has been incorporated for $5000 to manufacture and deal in machinery and equipment by J. Ellmen, E. Horowitz and B. Schoenberg, with S. A. Langfur, 36 West Forty-fourth street, as attorney.

NEW YORK—Savage Deremer Corp. has been incorporated with 1000 shares no par value common stock to manufacture vacuum pumps, by A. L. Wright, J. G. Deremer and J. H. Iselin, with Pendleton, Anderson, Iselin & Riggs, 25 Broad street, as attorney.

ROCHESTER, N. Y.—American Laundry Machinery Co., West avenue, plans 1-story, 80 x 100-foot brick and steel foundry and pattern shop. John Strobel, 622 E & B building, architect and engineer, is taking bids.

UTICA, N. Y.—Schiller Motors, has been incorporated for $40,000 to manufacture and deal in motors, etc., by W. R. and F. W. Schiller and J. W. Roberts, with Hart & Senior, Utica, as attorney.

COLUMBIANA, O.—The Production Foundry Co. has been incorporated for $25,000 to carry on general foundry business by W. B. Stevenson, L. P. Kulka, W. D. Young, W. Krauss and A. G. Davis. Operations are to begin as soon as plant recently purchased from a Youngstown company is placed in condition.

KENMORE, O.—Reports state Whitman & Barnes Mfg. Co., Akron, O., manufacturer of drop forgings, twist drills, etc., plans new factory building here, construction to be completed this year. Project temporarily delayed because of materials cost.

YOUNGSTOWN, O.—David Joseph plans new boiler works at Andrews avenue near East Madison avenue. A 50 x 180-foot building is planned.

YOUNGSTOWN, O.—The Standard Slag Co., with branch office at Steubenville, O., has purchased site in South McMechen, near Wheeling, W. Va., on which a cement plant will be built at once. Slag from the Benwood, W. Va., and Bellaire, O., blast furnaces of the United States Steel Corp. will be utilized for manufacture of cement and other road building products.

MARSHFIELD, OREG.—Mountain States Power Co. plans constructing $600,000 power plant to be started within 60 days.

ALTOONA, PA.—The Pennsylvania railroad has completed preliminary plans for two additional shops at Juniata.

BAKERTON, PA.—Sterling Coal Co. plans $150,000, 2-story machine and blacksmith shop. N. Lamont is general manager.

BEAVER FALLS, PA.—Darlington Clay Products Co., Darlington, was badlly damaged by fire recently with loss of about $150,000. Plans have not been made as yet for rebuilding.

HONESDALE, PA.—Keystone Foundry Co., recently badly damaged by fire, will be rebuilt.

LANCASTER, PA.—General Metal Products Co., Inc., recently incorporated for $25,000, will manufacture brass, bronze and aluminum castings and automobile specialties. Contracts have been placed for some equipment for plant construction. John E. McGovern is interested. Noted Nov. 29.

NEW CASTLE, PA.—The Blair Strip Steel Co., recently incorporated, plans local plant for producing cold-rolled steel and kindred products, work to cost about $90,000. George B. Blair, Sr. and Jr., head the company.

PHILADELPHIA—Joseph A. Wurster is having plans prepared for a warehouse addition.

PHILADELPHIA—A $14,000 machine shop will be erected by Frances Bedford Beddal.

General contract has been placed with Murphy-Quigley Co.

PHILADELPHIA—Charles O. Matthews has been awarded general contract for the erection of $5000 machine shop for L. Wickham.

PHILADELPHIA—Work will be started shortly by John F. Brown, Fifteenth and Chestnut streets, on a $250,000 service building at Thirty-second and Arch streets.

PHILADELPHIA—The Ford Motor Co. is completing plans for the erection of an assembly building and power house at Sixty-third street along the Scoville river.

PHILADELPHIA—A $7000 machine shop addition will be erected by M. Smith, 492 North Third street. The general contract has been placed with George Adams, 5905 Chester avenue.

PHILADELPHIA—A new plant will be erected at Salem, N. J., by Congoleum Co., Inc. Plans call for a 1-story power house and a 1 and 3-story manufacturing building. The Austin Co. has been awarded the general contract.

PHILADELPHIA—General contract for erection of a $14,000 ice manufacturing building has been awarded by Logan Ice Mfg. Co. to McCormack-Benham Co., 2403 South Broad street. The proposed plant will be erected at the northwest corner of Tenth and Windram streets.

PHILADELPHIA—General contract for the erection of a $535,000 plant for the Brandle & Smith Co. has been awarded to Wm. Steele & Sons Co. The proposed structure will be three stories high, of reinforced concrete.

PHILADELPHIA—A $25,000 warehouse will be erected at D and Erie avenue by the John Maneely Co., 247-249 North Twelfth street, dealer in plumbing, mill and factory supplies, etc.

PHILADELPHIA—Plans are being prepared for rebuilding the plant at Stowe, Pa., of Stanley G. Flagg & Co., to replace the structure recently badly damaged by fire. The Ballinger Co., Twelfth and Chestnut streets, is architect. Noted Dec. 27.

PITTSBURGH—Federal Electric & Radio Corp. plans 1-story brick and reinforced concrete plant. J. E. Mair, Park building, is interested.

PITTSBURGH—Triangle Coal & Coke Co. has been capitalized at $25,000 for mining, selling and dealing in coal, coke, etc., by William B. Atwood, Dormont; W. C. Maratta, Coraopolis, and George W. Kilpatrick, Pittsburgh.

PITTSBURGH—American Petri-Glazo Oil Tank Corp. has been granted a charter to manufacture tanks, reservoirs, etc. It is financed by C. M. Petrie, Edwin Bancroft and Harrison Graham, all of Pittsburgh, and is capitalized at $200,000.

READING, PA.—The Chantrell Hardware & Tool Co. will start work shortly on the erection of $50,000 plant addition.

WARREN, PA.—Barnhart-Davis Foundry Co. was damaged by fire Jan. 1 with about $50,000 loss to the foundry pattern works and machine shops. Plans are being drawn for rebuilding.

WASHINGTON, PA.—Sidway-Topliff Co. has been incorporated for $10,000 to manufacture toys, novelties, baby carriages, furniture, etc. Incorporators George N. Wolfe, M. W. McClane and John Slater, all of Washington.

WAYNESBORO, PA.—The Landis Tool Co. is submitting plans on the erection of a 1-story foundry costing $60,000, to replace the structure at Greencastle, Pa., recently damaged by fire. Elmer Frontz is manager. Noted Dec. 6.

CLEVELAND, TENN.—Hardwick Stove Co. has started constructing 4-story mounting room, and is receiving bids on 1-story moulding room, increasing capacity 50 per cent. Total cost estimated at $500,000.

KNOXVILLE, TENN.—Burdett Oxygen Co., St. Johns court and Fulton street, Chicago,

(*Continued on Page 256*)

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.515c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Cleveland	3.36c
Detroit	3.35c
Los Angeles	4.25c
New York	3.54c
Philadelphia	3.47c
Pittsburgh	3.15c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.35c
St. Paul	3.45c

IRON BARS

Boston	3.515c
Buffalo	3.50c
Chicago	3.20c
Cincinnati	3.40c to 3.50c
Detroit	3.35c
New York	3.54c
Philadelphia	3.47c
St. Louis	3.35c

SHAPES, STRUCTURAL

Boston	3.615c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Los Angeles	4.10c
New York	3.64c
Philadelphia	3.57c
Pittsburgh	3.25c
San Francisco	3.60c
Seattle (large shapes)	3.75c
St. Louis	3.45c
St. Paul	3.55c

PLATES

Boston	3.615c
Boston, 3/16-inch	3.04c
Buffalo	3.65c
Chicago	3.30c
Cincinnati	3.50c to 3.60c
Cleveland	3.46c
Detroit	3.45c
Detroit, 3/16-inch	3.45c
Los Angeles	4.00c
New York	3.64c
Philadelphia	3.57c
Philadelphia, 3/16-inch	3.82c
Pittsburgh	3.25c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.55c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.30c
Chicago	4.00c
Cincinnati	4.10c
Cleveland	3.60c to 4.06c
Detroit	4.15c
Los Angeles	5.00c
New York	4.34c
Philadelphia	4.10c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.10c
St. Paul	4.25c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	5.00c
Chicago	4.70c
Cincinnati	4.90c
Cleveland	4.50c to 4.65c
Detroit	4.85c
Los Angeles	6.20c
New York	4.50c to 4.70c
Philadelphia	5.15c
San Francisco	5.80c
Seattle	6.00c
St. Louis	4.75c
St. Paul	4.95c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	6.10c
Chicago	5.85c
Cincinnati	5.90c
Cleveland	5.60c to 5.80c
Detroit	6.00c
Los Angeles	7.00c
New York	5.50c to 5.70c
Philadelphia	6.25c
San Francisco	6.50c
Seattle	7.00c
St. Louis	5.75c
St. Paul	5.75c to 6.00c

BANDS

Boston	4.315c
Buffalo	4.35c
Chicago	3.95c
Cincinnati	4.00c to 4.10c
Cleveland	4.01c to 4.16c
Detroit	4.10c
Los Angeles	4.90c
New York	4.39c
Philadelphia	4.27c
Pittsburgh	3.95c
San Francisco	4.50c
Seattle	4.75c
St. Paul	4.20c

HOOPS

Boston	5.80c
Buffalo	4.65c
Chicago	4.55c
Cleveland	4.01c to 4.16c
Detroit	4.95c
New York	5.19c
Philadelphia, 1 inch and wider 20 gage and heavier	4.27c
Pittsburgh	3.95c
Seattle	5.50c
St. Paul	4.80c

COLD ROLLED STEEL

Boston (rounds)	4.35c
Boston (shapes)	4.85c
Buffalo (rounds)	4.45c
Buffalo (shapes)	4.95c
Chicago (rounds)	4.00c
Chicago (shapes)	4.50c
Cincinnati (rounds)	4.25c
Cincinnati (shapes)	4.75c
Cleveland (rounds)	4.10c
Cleveland (shapes)	4.60c
Detroit (rounds)	4.30c
Detroit (shapes)	4.80c
Los Angeles (rounds)	5.60c
New York (rounds	4.40c
New York (shapes)	4.90c
Philadelphia (rounds)	4.35c
Philadelphia (shapes)	4.85c
Pittsburgh (rounds)	4.05c
Pittsburgh (sq. hex. and flats)	4.55c
San Francisco (rounds)	5.50c
Seattle (rounds)	5.50c
St. Paul (rounds)	4.25c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

	Black	galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-6-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron.$6.45
Mesabi bessemer, 55 per cent iron.... 6.20
Old Range nonbessemer, 51½ per cent iron 5.70
Mesabi nonbessemer, 51½ per cent iron 5.55

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent ..... 10.00 to 11.00
Copper free low phosphorus 53 to 65 per cent..... 13.25 to 16.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent ..... 9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent..... 10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent.... 11.00 to 12.00
Swedish foundry or basic, 66 to 68 per cent ..... 9.25 to 10.00
Spanish foundry or basic, 50 to 54 per cent..... 9.00

Manganese Ores

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....
.....40 to 42 cents c.i.f. tidewater
Indian, minimum 47 per cent.....
.....40 to 42 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....
.....43 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton.$19.75 to 23.50
Washed gravel, imported, duty paid eastern tidewater, per gross ton ..... 20.60 to 21.10

Rivets

Structural rivets, Pittsburgh.. 2.90c
Rivets, 7/16-in. and smaller.....
.....65, 10 and 5 off

Nuts and Bolts

(Up to 1¼ and 1⅓ inches inclusive)

Hot pressed square or hexagon blank .....$4.50 off list
Hot pressed square or hexagon tapped .....$4.50 off list
Cold punched square or hexagon blank .....$4.25 off list
Cold punched, square or hexagon.... .....$4.25 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger.....75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller.....80 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS
(¾ x 6 inches, smaller and shorter)

Rolled thread .....60 and 10 off
Cut thread .....60 off
Larger and longer.....60 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread.....60, 10 and 10 off
Cut thread .....60 and 10 off
Larger and longer .....60 and 10 off
((¾ x 4 inches, cold punched nuts)
Cut thread .....50, 10 off
Larger and longer .....50, 10 off
Lag screws .....65 and 10 off
Plow bolts Nos. 1, 2 and 3 heads.....
.....50 and 10 off
4 to 10 heads .....50-10 + 20 off
Flat and round head stove bolts.....
.....75, 10 and 5 off
Other stove bolts .....75 and 5 off
Tap bolts .....25 and 10 off
Bolt ends with hot pressed nuts.....
.....60 and 10 off
Bolt ends with cold punched nuts....
.....50 and 10 off
Blank bolts .....60 and 10 off
Rough stud bolts with nuts.....
.....50 off

WASHERS

Wrought washers .....$5.00 to $5.50 off

Steel Pipe

(Effective April 19, 1923)

Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+29
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap welded)
(Effective April 19, 1923)

2 and 2¼-inch ..... 23 off
2½ and 2¾-inch ..... 33 off
3-inch ..... 36 off
3¼ to 3¾-inch .....38½ off
4 to 13-inch ..... 42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch .....+22
1¾-inch .....+12
2 and 2¼-inch .....+ 2
2½ to 3-inch 3
3¼ to 4½-inch 5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch ..... 51 off
1¼ and 1½-inch ..... 43 off
1¾-inch ..... 27 off
2 and 2¼-inch ..... 18 off
2½ and 2¾-inch ..... 28 off
3 and 3¼-inch ..... 32 off
3½ and 3¾-inch ... . 33 off
4-inch ..... 37 off
4½ and 5-inch ..... 29 off

SEAMLESS HOT ROLLED

3 and 3¼-inch ..... 34 off
3½ and 3¾-inch ..... 35 off
4-inch ..... 39 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent..... 83 off
Carbon, 0.30 to 0.40 per cent..... 81 off
Carbon, 0.40 to 0.50 per cent....net price
Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES
(Effective April 19, 1923)

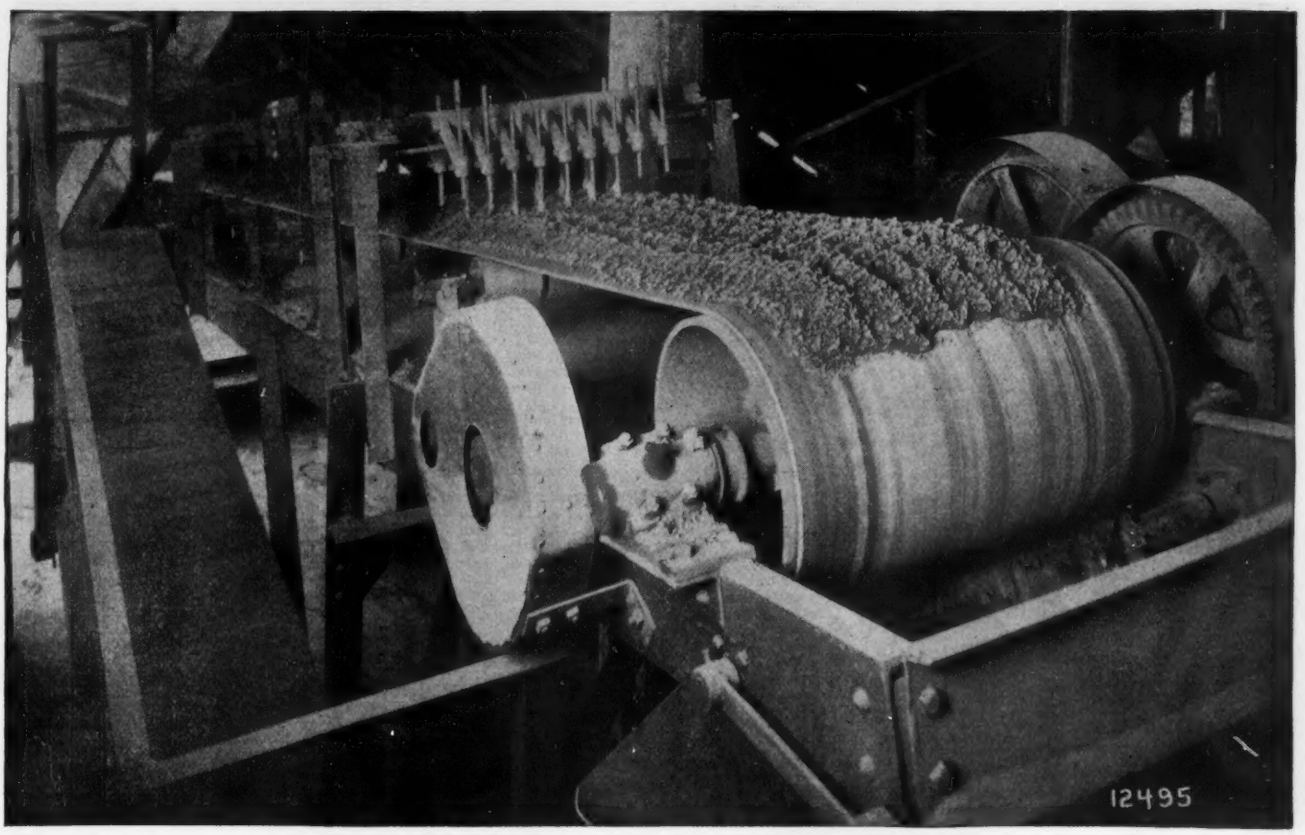
Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

Hot Rolled Alloy Steels

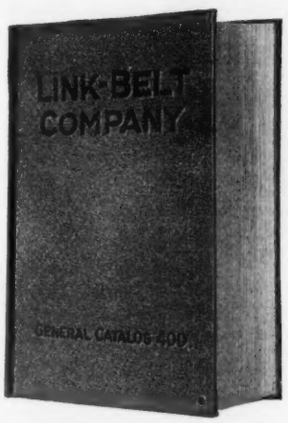
Prices per pound, Pittsburgh

S. A. E. Series—	
2300 (3½ per cent nickel).....	5.00 to 5.25c
3100 (nickel chromium).....	4.00 to 4.25c
6100 (chrome vanadium).....	5.00c
6100 (chrome vanadium spring)	4.75c
9250 (Silico manganese spring)	3.90c



Part of the sand-conditioning machinery at Ferro Machine & Foundry Company, Cleveland, where ninety tons of sand per hour are made ready for the molders. The Ferro Folks say Link-Belt Equipment gives them the best sand they ever had.

Getting the Right Machinery Pays



You can do much to inform yourself on the subject of labor-aiding machinery by having at hand the Link-Belt 832 page General Catalog No. 400. It's free.

THERE'S no argument over the wisdom of substituting mechanical handling for manual labor where it will show a saving. If a machine will pay for itself in savings, it is a good investment.

Give a molder his conditioned sand ready to drop into the flask, a molding machine, a mechanical carrier for molten metal and a shake-out grate, and he can produce for himself and his employer much more than he can by laborious manual methods.

But the important thing is to get the right machinery, installed in the right way, which will operate without trouble, and perform the work called for by the particular conditions, at a saving.

Link-Belt has amply demonstrated its success in this direction by solving many difficult problems. If you are interested in practical labor-saving machinery for your shop, you'll be interested in a new book which shows some representative Link-Belt installations. Ask for No. 690.

1389

LINK-BELT COMPANY

PHILADELPHIA, 2045 Hunting Park Ave. CHICAGO, 300 W. Pershing Road INDIANAPOLIS, 200 S. Belmont Ave.

New York - 2676 Woolworth Bldg. Buffalo - - - - 745 Ellicott Square Detroit - - 4222 Woodward Ave. Louisville, Ky. - - 321 Starks Bldg.
Boston - - - - - - - 49 Federal St. Wilkes-Barre 826 Second Nat'l Bank Bldg. Kansas City, Mo. - 307 Elmhurst Bldg. New Orleans, - - 504 Carondelet Bldg.
Pittsburgh - - - - 335 Fifth Ave. Huntington, W. Va. Robson-Prichard Bldg. Denver - - - 520 Boston Bldg. Birmingham, Ala. 720 Brown-Marx Bldg.
St. Louis - 705 Olive Street Cleveland - - - 329 Rockefeller Bldg. Atlanta - - - - 24 Marietta St. Link-Belt Limited - Toronto and Montreal

H. W. CALDWELL & SON CO.:—Chicago, 1700 S. Western Ave. New York, 2676 Woolworth Bldg. Dallas, Texas, 709 Main St.

LINK-BELT MEESE & GOTTFRIED CO.:—San Francisco, 19th and Harrison Sts. Los Angeles, 400 E. Third St. Seattle, 820 First Ave. S. Portland, Ore., 67 Front St.

LINK-BELT

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	14.00 to 14.50
Boston (dealers)	12.00 to 13.00
Buffalo	18.00 to 19.00
Chicago	17.00 to 17.50
Cleveland	19.50 to 20.00
Cincinnati	15.50 to 16.00
Detroit (dealers)	16.50 to 17.00
Eastern Pennsylvania	18.00 to 18.50
New York (dealers)	13.50 to 14.00
Pittsburgh	21.50 to 22.00
St. Louis	17.00 to 17.50
Valleys	21.50 to 22.00
No. 1 railroad steel New York (dealers)	14.25 to 14.75

COMPRESSED SHEETS

Buffalo	16.00 to 16.50
Chicago	14.00 to 14.50
Cleveland	17.25 to 17.50
Detroit (dealers)	14.50 to 15.00
Pittsburgh	19.50 to 20.00
Valley	19.00 to 19.50

BUNDLED SHEETS

Buffalo	11.00 to 12.00
Cincinnati	12.50 to 13.00
Cleveland	14.00 to 14.25
Detroit	10.50 to 11.50
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	17.50 to 18.00
St. Louis	10.50 to 11.00
Valley	16.25 to 16.50

SHEET CLIPPINGS, LOOSE

Chicago	9.50 to 10.00
Detroit	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	12.00 to 13.00
Boston (dealers)	14.00 to 14.50
Chicago	20.00 to 20.50
Cincinnati	20.00 to 21.00
Cleveland	18.00 to 18.50
St. Louis	20.00 to 20.50

STOVE PLATE

Birmingham	17.00 to 17.50
Boston (consumers)	16.00 to 16.50
Buffalo	18.00 to 18.50
Pittsburgh	16.00 to 16.50
Chicago	20.00 to 20.50
Cincinnati (net iron)	13.50 to 14.00
Cleveland	19.25 to 19.50
Detroit (net ton) (dealers)	14.50 to 15.00
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	13.00 to 14.00
Pittsburgh	16.00 to 16.50
St. Louis	18.50 to 19.00

LOW PHOSPHORUS

Buffalo	21.00 to 22.00
Cincinnati	15.50 to 16.00
Eastern Pennsylvania	21.00 to 22.00
Pitts., Billets and bloom crops	23.50 to 24.00

SHOVELING STEEL

Chicago	16.75 to 17.25
Pittsburgh	16.50 to 17.00
St. Louis	17.00 to 17.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	20.50 to 21.00
Eastern Pennsylvania	20.00 to 21.00
Pittsburgh	22.50 to 23.00
St. Louis	20.50 to 21.00

FROGS, SWITCHES, GUARDS

Chicago	17.25 to 17.75
Eastern Pennsylvania	18.00 to 18.50
St. Louis	18.25 to 18.75

BOILER PLATE, CUT

St. Louis	11.75 to 12.25

ANGLE BARS—STEEL

Chicago	18.75 to 19.25
St. Louis	18.00 to 18.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	12.00 to 13.00
Boston dealers)	14.50 to 15.00
Buffalo	15.50 to 16.00
Cleveland, No. 1	17.00 to 17.25
Chicago, No. 1	17.00 to 17.50
Chicago, No. 2	17.00 to 17.50
Cincinnati, No. 1	14.00 to 14.50
Detroit, No. 2	16.00 to 16.50
Eastern Pennsylvania	19.00 to 20.00
New York, No. 1 (dealers)	14.75 to 15.25
Pittsburgh, No. 1	16.00 to 16.50
Pittsburgh, No. 2	21.50 to 22.00
St. Louis, No. 1	16.50 to 17.00
St. Louis, No. 2	17.00 to 17.50

WROUGHT PIPE

Boston dealers)	12.00 to 12.50
Buffalo	13.50 to 14.00
Eastern Pennsylvania	17.50 to 18.50
New York (dealers)	12.75 to 13.25

YARD WROUGHT

Boston	12.00 to 13.00
Eastern Pennsylvania	18.50 to 19.50

CITY WROUGHT

New York, long	12.75 to 13.25

BUSHELING

Buffalo	15.50 to 16.00
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	9.50 to 10.00
Cincinnati, No. 1	12.50 to 13.00
Cleveland, No. 1	14.50 to 15.00
Cleveland, No. 2	12.50 to 12.75
Detroit, No. 1	13.50 to 14.00
Detroit, No. 2 (new)	13.00 to 13.50
Detroit, No. 2 (old)	10.00 to 11.50
Eastern Pennsylvania	16.00 to 17.00
Pittsburgh, No. 1	18.50 to 19.00
St. Louis, No. 1	16.50 to 17.00

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston (dealers)	10.00 to 10.50
Buffalo	12.50 to 13.00
Chicago	10.50 to 11.00
Cincinnati	11.00 to 11.50
Cleveland	15.50 to 15.75
Detroit (dealers)	12.00 to 12.50
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	10.50 to 11.00
Pittsburgh	15.50 to 16.00
St. Louis	10.00 to 10.50
Valleys	15.00 to 15.25

CAST IRON BORINGS

Birmingham (chemical)	16.00 to 17.00
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	12.00 to 12.50
Boston (dealers)	10.00 to 10.50
Buffalo	13.50 to 14.00
Chicago	13.00 to 13.50
Cincinnati	12.50 to 13.00
Cleveland	16.50 to 17.00
Detroit (dealers)	12.50 to 13.00
Eastern Pennsylvania (chem.)	16.00 to 17.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers' price)	10.50 to 11.00
Pittsburgh	16.50 to 17.00
St. Louis	14.00 to 14.50
Valleys	16.25 to 16.75

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	9.50 to 10.00
Cleveland	16.25 to 16.50
Detroit (dealers)	11.50 to 12.25
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	9.50 to 10.00

IRON AXLES

Birmingham	21.00 to 22.00
Boston (consumers)	31.00 to 32.00
Buffalo	28.00
Chicago	28.50 to 29.00
Cincinnati	23.50 to 24.00
Eastern Pennsylvania	26.00 to 30.00
New York (dealers)	25.75 to 26.25
St. Louis	28.50 to 29.00

IRON RAILS

Buffalo	20.00 to 21.00
Chicago	20.00 to 20.50
Cincinnati	16.00 to 16.50
St. Louis	17.50 to 18.00

PIPES AND FLUES

Chicago	12.25 to 12.75
Cincinnati	10.50 to 11.00
Cleveland	15.00 to 15.50
St. Louis	13.75 to 14.25

RAILROAD GRATE BARS

Buffalo	16.50 to 17.00
Chicago	18.25 to 18.75
Cleveland	19.00 to 19.50
Eastern Pennsylvania	17.50 to 18.50
New York (dealers)	14.25 to 14.75
St. Louis	17.50 to 18.00

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Chicago, small	12.00 to 12.50
Cleveland, small	14.25 to 14.75
Cleveland, large	13.75 to 14.25
Detroit (dealers)	12.00 to 13.00

FORGE SCRAP

Boston (dealers)	10.00 to 10.50
Chicago	17.00 to 17.75
Eastern Pennsylvania	15.50 to 16.00

ARCH BARS AND TRANSOMS

Chicago	23.00 to 23.50
St. Louis	23.50 to 24.00

ANGLE BARS—IRON

Chicago	23.00 to 23.50
St. Louis	24.00 to 24.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	10.50 to 11.00
Buffalo	15.00 to 15.50
Chicago	15.00 to 15.50
Cleveland	16.25 to 16.75
Eastern Pennsylvania	16.00 to 16.50
Pittsburgh	18.00 to 18.50
St. Louis	14.00 to 14.50

STEEL CAR AXLES

Birmingham	19.00 to 20.00
Boston (consumers)	20.00 to 21.00
Buffalo	19.00 to 20.00
Chicago	21.00 to 21.50
Cleveland	21.50 to 23.00
Eastern Pennsylvania	21.00 to 23.00
New York (dealers)	15.25 to 15.75
Pittsburgh	22.50 to 23.00
St. Louis	21.50 to 22.00

SHAFTING

Boston (consumers)	21.00 to 22.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	23.00 to 25.00
New York dealers)	14.75 to 15.25
St. Louis	20.50 to 21.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	18.00 to 19.00
Birmingham, iron	13.00 to 14.00
Boston (consumers)6	20.00 to 20.50
Buffalo	19.50 to 20.00
Chicago, iron	20.50 to 21.00
Cincinnati	15.50 to 16.00
Eastern Pennsylvania	19.50 to 20.50
New York iron (dealers)	15.50 to 16.00
Pittsburgh, iron	21.00 to 21.50
Pittsburgh, steel	22.50 to 23.00
St. Louis, iron	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	19.50 to 20.00
Boston (consumers)	22.50 to 23.00
Buffalo	19.50 to 20.50
Chicago, cupola	22.00 to 23.00
Cincinnati No. 1 machinery cupola (net tons)	20.00 to 21.00
Cleveland, cupola	21.50 to 22.50
Detroit (net tons) (dealers)	18.00 to 18.50
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, cupola (dealers)	17.25 to 17.75
Pittsburgh, cupola	21.50 to 22.00
San Francisco	25.00 to 26.00
St. Louis, railroad	21.00 to 21.50
St. Louis, agricultural	21.00 to 21.50
Valleys	22.00 to 23.00

HEAVY CAST

Boston (consumers)	19.50 to 20.00
Buffalo (breakable)	16.50 to 17.00
Cleveland	17.00 to 17.25
Detroit (automobile) (net ton)	22.50 to 23.00
Eastern Pennsylvania	18.00 to 18.50
New York (dealers)	16.75 to 17.25
Pittsburgh	19.00 to 19.50

MALLEABLE

Boston (railroad)	18.00 to 19.00
Buffalo	20.00 to 21.00
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	19.50 to 20.50
Cincinnati, agricultural	16.50 to 17.00
Cincinnati, railroad	16.50 to 17.00
Cleveland, agricultural	20.00 to 20.50
Cleveland, railroad	21.00 to 21.25
Detroit (dealers)	17.00 to 17.50
Eastern Pennsylvania, railroad	17.00 to 18.00
Pittsburgh, railroad	19.50 to 20.00
St. Louis, agricultural	18.50 to 19.00
St. Louis, railroad	18.75 to 19.25

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	15.00 to 15.50
Boston (dealers)	14.00 to 14.50
Chicago	18.50 to 19.00
Cleveland	19.50 to 20.00
Detroit	16.50 to 17.00
Eastern Pennsylvania	19.00 to 20.00
New York (dealers)	15.25 to 15.75
Pittsburgh district	22.50 to 23.00
St. Louis	19.00 to 19.50

LOCOMOTIVE TIRES

Chicago	19.25 to 20.25
St. Louis	18.00 to 18.50

LOW PHOSPHORUS PUNCHINGS

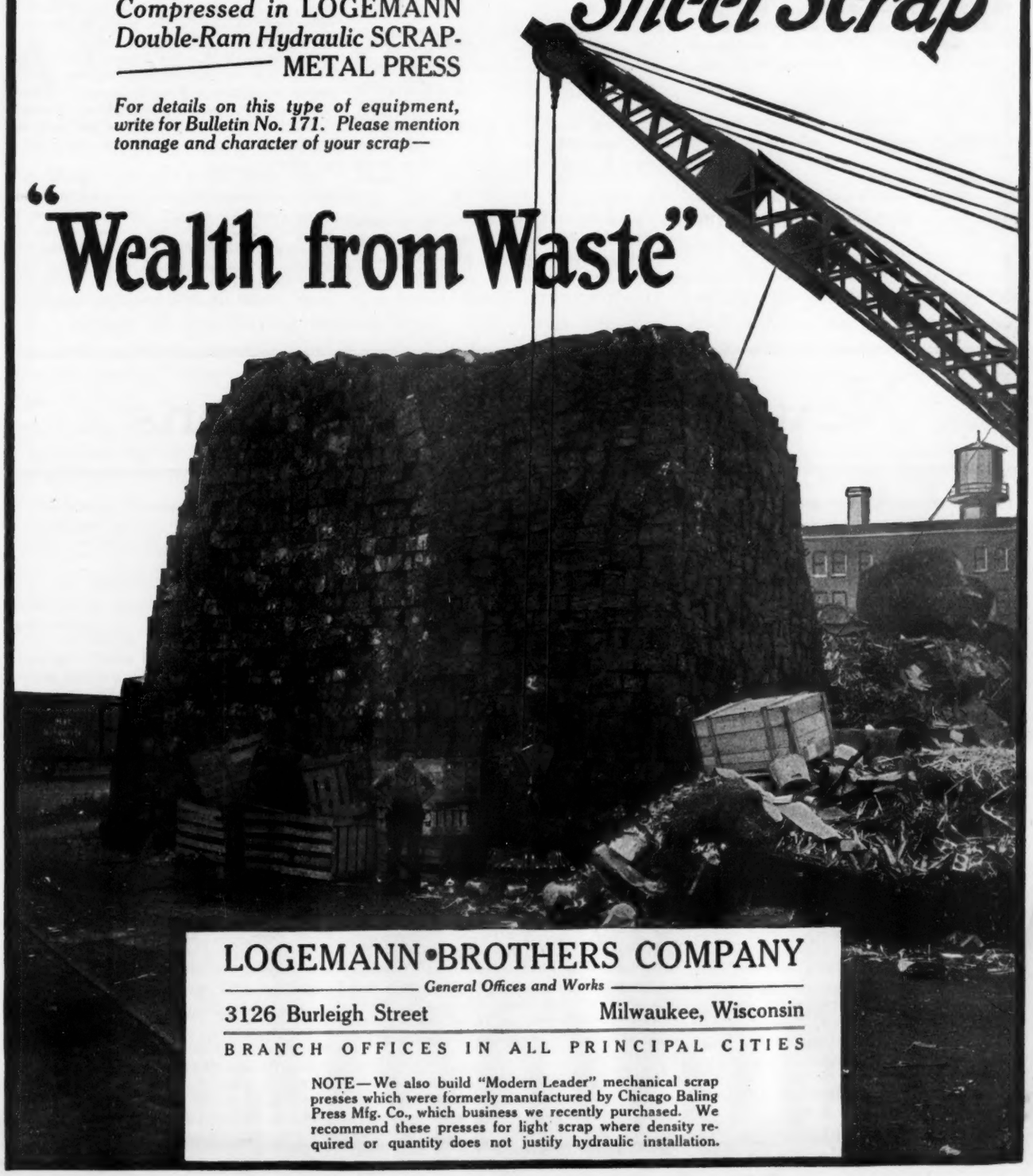
Chicago	18.25 to 18.75
Eastern Pennsylvania	22.00 to 23.00
Pittsburgh	22.50 to 23.00

Almost 2000 Tons - of "LOGEMANN HYDRAULIC-COMPRESSED" Sheet Scrap

Compressed in LOGEMANN *Double-Ram Hydraulic* SCRAP-METAL PRESS

For details on this type of equipment, write for Bulletin No. 171. Please mention tonnage and character of your scrap—

"Wealth from Waste"



LOGEMANN•BROTHERS COMPANY

General Offices and Works

3126 Burleigh Street Milwaukee, Wisconsin

BRANCH OFFICES IN ALL PRINCIPAL CITIES

NOTE—We also build "Modern Leader" mechanical scrap presses which were formerly manufactured by Chicago Baling Press Mfg. Co., which business we recently purchased. We recommend these presses for light scrap where density required or quantity does not justify hydraulic installation.

Construction and Enterprise

(Continued from Page 250)

has purchased 1-acre site here for plant to be built immediately.

NASHVILLE, TENN.—From $30,000 to $40,000 will be spent for machinery to equip plant to be built for Tennessee Enamel Mfg. Co., Park avenue and Railroad. M. H. Wright, 1710 Primrose avenue, is president. Plant will be 95 x 180 feet, brick, concrete and steel construction, costing about $25,000.

FORT WORTH, TEX.—Drane-Humphrey Co. has been incorporated for $40,000 to design, purchase and deal in iron and steel products, by F. M. Drane, S. H. Humphrey and R. T. Thornton.

DALLAS, TEX.—Galion Road Machinery Co. of Texas has been incorporated for $10,000 to manufacture and deal in machinery by D. C. Boyd, W. C. Giberson and R. L. Stennis.

GALVESTON, TEX.—Marine Iron Works, Inc., has been incorporated for $3000 by S. A. Dugan, C. A. McCaleb and A. B. Rubbright.

LOCKHART, TEX.—Lockhart Machine & Supply Co. has been incorporated with $6000 capital, by L. P. Scheh, C. M. Scheh and E. L. Williams.

PORTSMOUTH, VA.—Southern Wheel Co. is constructing 90 x 340-foot branch plant for manufacture of car wheels.

VANCOUVER, WASH.—United States bureau of public roads plans $10,000 machine and auto repair shop.

CHARLESTON, W. VA.—Ideal Mfg. Co., Box 497, recently incorporated, has secured patent rights on coal loader and is asking bids on manufacture of small double drum electric hoists and other parts for making complete loader. Noted Dec. 27.

WHEELING, W. VA.—Tyler Iron Works has been incorporated for $25,000 by David Tyler, William Jasper and others.

APPLETON, WIS.—Bids are being taken by the Kurz Motor Car Co. for a 2-story addition, 50 x 75 feet, to its public garage and repair shop at 1107 College avenue. Architect E. A. Wettengel, Appleton, has completed plans. Noted Dec. 6.

KENOSHA, WIS.—Contracts have been let by Peter Pirsch & Co., manufacturer of fire apparatus, for a 1-story brick and steel manufacturing addition, 100 x 200 feet, costing about $50,000.

KOHLER, WIS.—The Kohler Co., manufacturer of bath tubs, will build a brick factory addition, 60 x 180 feet, and a cleaning room, 100 x 274 feet. Alfred Treick is superintendent.

LA CROSSE, WIS.—Milwaukee Corrugating Co., manufacturer of metal building products, has purchased three buildings here which it will remodel for manufacturing purposes. Louis Kuehn is president.

MILWAUKEE—The Federal Pressed Steel Co. will build a new enamel house, 40 x 50 feet, at its main works at 52—60 Keefe avenue.

MILWAUKEE—A 1-story shop addition, 40 x 90 feet, will be erected by the Milwaukee Air Power Pump Co., 8-12 Keefe avenue.

MILWAUKEE—Myers Pump & Sales Co. has been incorporated for $25,000 to manufacture and deal in pumps, etc., by William M. Myers, James E. Myers and George H. Nickels.

RACINE, WIS.—National Machine Tool Co. has been incorporated for $20,000 to manufacture and deal in machine tools, by Robert Henrich, Paul Kramer and Oswald Reiche.

MILWAUKEE—Milwaukee Airplane Co. recently incorporated by Gilles F. Meisenheimer, will begin manufacture of airplanes soon in plant at New Butler, suburb of Milwaukee, office being at 330 Clinton street, in the latter city.

MONROE, WIS.—The Blumer Mfg. & Sales Co. has sold its machine shop business, including all machinery and stock to L. G. Carter, who has been foreman several years. The new owner has leased other quarters and will buy some new equipment to double the size of the shop.

PHILLIPS, WIS.—Carl F. Scheel, city clerk, will close bids Feb. 1 on one motor-driven centrifugal pump of 1250 gallons capacity, and one 150-horsepower oil engine to drive the unit; also one 300-gallon centrifugal pump with motor. At the same time bids are being taken for a 100,000-gallon standpipe on a 90-foot steel tower. Frank Henry is consulting engineer.

New Trade Publications

PULVERIZING EQUIPMENT—The Fuller-Lehigh Co., Fullerton, Pa., has issued a 24-page booklet describing and illustrating several types of pulverizing mills, crushing rolls, drier, equipment for conveying pulverized material, pulverized coal burners, air systems, feed controllers and gages.

STEAM FIXTURES—The Strong, Carlisle & Hammond Co., Cleveland, has issued a 40-page booklet describing many fixtures necessary in steam control and regulation, such as steam traps, boiler feed regulators, separators, vacuum traps, reducing valves, governor and pressure regulators, check valves, and engine stops.

FLEXIBLE COUPLINGS—Smith & Serrell, Central avenue and Halsey street, Newark, N. J., recently issued a booklet describing the design of a flexible coupling and illustrating the many uses to which it may be put. Various tables are included for use in determining the size of coupling to be used.

OIL BURNERS—"The Correct Method of Burning Fuel Oil" is the subject of a booklet published by the Mahr Mfg. Co., Minneapolis, Minn. Types of atomizers, venting methods, trench fired furnaces, open chamber furnaces, furnace linings, refractory materials, etc., are discussed.

ARMORED TRUCKS—The R. G. Haskins Co., 520 West Monroe street, Chicago, is distributing a section of wood veneered with steel for use as the walls of containers of steel trucks. The sheet consists of a thin section of wood protected on either side by steel. Strength with lightness is claimed for the material.

PNEUMATIC DIE CUSHIONS—The Marquette Tool & Mfg. Co., Chicago, has issued a 130-page catalog in which pneumatic die cushions for power presses are discussed. The purpose of this publication is to present the information accumulated through the years of experience in the manufacture of pneumatic die cushions for sheet metal drawing and forming operations. The book is well illustrated with views of various parts of the die cushion and also many types of machines with this device installed.

PICKLE CONTROL EXTRACT—A liquid chemical to be added to hydrochloric or sulphuric acid pickling bath to control the acid so that the action is confined solely to the removal of scale or rust is described in a pamphlet issued by the American Chemical Paint Co., Philadelphia.

TRANSFORMERS—The Esterline-Angus Co., Indianapolis, has issued a pamphlet giving information on a new current transformer, which it is claimed has six transformers in one, having high accuracy, ample insulation, large capacity, etc. A view of the new plant of the company also is shown.

CUPOLA CHARGING MACHINES—The advantages to be found in employing a machine for charging a cupola are set forth in a bulletin of the Whiting Corp., Harvey, Ill. Views of various installations are shown together with a partial list of the companies already using the machine charger.

STEAM HAMMERS—In a 24-page booklet published by the Morgan Engineering Co., Alliance, O., various types of steam hammers are described and illustrated. The bulletin briefly calls attention to some of the prominent features of the line of hammers manufactured by this company and shows the size and variety of hammers and equipment that can be furnished.

CONVEYING SYSTEMS—Conveying pulverized materials by means of compressed air is discussed in a folder published by the Fuller-Lehigh Co., Fullerton, Pa. A diagram showing the arrangement of the various parts of the conveying system as well as views of the pump, electromagnetic valve, bin indicator and portable pump are included in the publication.

WELDING APPARATUS—Apparatus used in welding such as acetylene generators, compressing plants, welding and cutting torches, regulators, gages, etc., are described in a bulletin issued recently by the Alexander Milburn Co., Baltimore. Another bulletin from the same company describes the many industrial uses to which a carbide light may be put.

PRESSES—A bulletin recently published by the Oilgear Co., Milwaukee, announces the introduction of a new line of self-contained broaching and assembly presses built in 15, 25 and 50-ton capacities. The principal features, such as accurate control of ram speeds and pressures, are discussed and detailed specifications are included.

DRILLS—The Cleveland Twist Drill Co., Cleveland, recently published a 226-page book describing and illustrating its many types of tools. All of the standard tools are shown, as well as some of special design. The information given should serve not only as a ready guide to the tools themselves but also to the best and most economical use to which they may be put.